AN INTERNATIONAL ANALYSIS OF IT SERVICE MANAGEMENT BENEFITS AND PERFORMANCE MEASUREMENT

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ABSTRACT

It is widely accepted by Information Technology service managers that frameworks such as the IT Infrastructure Library can deliver real operational efficiencies but there are few empirical studies that investigate the benefits realised and performance metrics gathered. The objective of this paper is to provide an international analysis of IT service management benefits and performance measurement by comparing the findings from a recent Australian survey with results from a similar survey conducted in the United Kingdom and United States of America. International literature on Information Systems (IS) effectiveness and performance measurement specifically related to ITSM is reviewed and used to guide the development of the Australian survey. Both surveys report rapid uptake of ITIL® Version 3. There are many reported benefits supported by metrics at the process level. However, the comparative analysis of the Australian and UK/USA studies reveals that there is limited awareness of performance measurement frameworks.

KEYWORDS

IT Service Management, performance measurement, benefits realisation, ITIL, balanced scorecard.

INTRODUCTION

IT service managers are responsible for an increasingly diverse and crucial infrastructure. They are under pressure to reduce costs while helping the organisation to generate revenue, and to provide fast, cost effective service to their customers. In recent years, many organisations have recognised the critical role played by their Information Systems (IS) and invested in Information Technology Service Management (ITSM) frameworks such as the IT Infrastructure Library (ITIL), IBM Service Management Reference Model, Microsoft Operations Framework and HP IT Service Management Reference Model. However, there is little empirical research to evaluate the performance measurement of ITSM or the benefits realised from ITSM initiatives.

Championed by the internationally active IT Service Management Forum (itSMF), ITIL has become widely adopted and recognised for providing effective management

and control of IT service. Several studies have explored the motivations for adopting ITSM frameworks and are useful in understanding the benefits as well as performance measurement efforts in ITSM (Barafort, Di Renzo and Merlan 2002; Hochstein, Tamm and Brenner 2005a; Hochstein, Zarnekow and Brenner 2005c).

It is widely accepted by IT service managers that ITSM frameworks such as ITIL and the ITSM standard ISO/IEC 20000 can deliver real operational efficiencies, ultimately translating into revenue-increasing and cost-reducing benefits. However, despite the tremendous potential to realise benefits, the implementation of ITSM frameworks such as ITIL is slowed not only by the size of the investment required but also by the difficulty in quantifying benefits and linking operational and financial benefits together. A study of six German firms revealed that none of these large organisations produced a business case for ITIL investment, due to the difficulty in determining benefits (Hochstein, Tamm and Brenner 2005b). A similar situation has been reported in relation to Australian (Cater-Steel, Toleman and Tan 2006b) and US organisations (Pollard and Cater-Steel 2009).

From an investment point of view, ITSM represents a serious financial commitment with some organisations spending more than half a million dollars on implementing new IT service delivery frameworks (Deare 2006), but there have been few empirical studies to date showing the benefits of implementation underpinned by the performance measurement of ITSM. It is important to measure and report the actual benefits and performance of ITSM to encourage organisations to consider implementing ITSM because ITSM frameworks such as ITIL "can help drive productivity gains, cost savings and stakeholder wins more broadly than many people realise" (Fisher 2006).

To address the deficiency in empirical research, this paper addresses two research questions:

1. What are the measurable benefits of implementing ITSM?
2. What are the performance measures and frameworks used to determine ITSM benefits?

These research questions are important because an ITSM performance measurement framework is crucial to organisations for a number of reasons. It is reported that organisations have a large expenditure on IT with IT operations estimated at 70 percent of expenditure (Tracy, Guevara, Harcourt and Stegman 2006). It is estimated that the size of global IT spending is expected to reach US$3.3 Trillion in 2010 with IT services reaching US$816 Billion (Gordon, Gomolski, Hardcastle, Correia, Kjeldsen, Hale, Lovelock, Potter and McDonald 2010). IS productivity measurement studies show that IS management is a key factor that gives an organisation competitive advantage, for instance, the quality of the firm-wide management and commitment to IT is a significant moderator between strategic IT investment and firm performance (Weill 1992). This is echoed in the statement that the control and governance of the IT function is becoming quite critical in organisations due to the

significant investment in IT function expenditure (Son, Weitzel and Laurent 2005). ITSM performance measurement is therefore important to organisations because of the size of the investment of IT expenditure and competitive advantage that IT management can deliver to an organisation.

The objective of this paper is to provide an international analysis of ITSM benefits and performance measurement. The paper is structured as follows. The literature review uses a systematic approach to identify relevant empirical and theoretical studies focusing specifically on ITSM effectiveness and performance measurement. The method section describes the Australian survey and procedures used to compare the Australian and International results. The results from the Australian survey are presented, and then the findings from the Australian and the UK/USA surveys compared. The conclusion summarises the discussion and presents an agenda for future research.

A REVIEW OF RELEVANT PERFORMANCE MEASUREMENT LITERATURE

The literature review that follows makes a unique contribution to ITSM by systematically analysing and logically synthesising ITSM benefits and performance measurement studies and identifying those with explicit linkages as well as exposing those with implicit connections. A systematic literature review is undertaken to aggregate empirical evidence obtained using a variety of techniques in differing contexts (Kitchenham, Brereton, Budgen, Turner, Bailey and Linkman 2009). In this paper the following literature review process is implemented: the protocol is developed, and relevant literature is selected based on inclusion and exclusion criteria. Only literature that addresses organisational and IS effectiveness, and ITSM performance measurement, benefits and effectiveness is included. An effort is made to ensure studies from around the globe are included. Literature whose source cannot be established and not subjected to validity checks such as peer reviews is excluded.

This paper uses the definitions of performance measurement and performance measures that state "the level of performance a business attains is a function of the efficiency and effectiveness of the actions it undertakes, and thus:

- Performance *measurement* can be defined as the process of quantifying the efficiency and effectiveness of action.
- A performance *measure* can be defined as a metric used to quantify the efficiency and/or effectiveness of an action" (Neely, Gregory and Platts 2005).

This definition is widely used in the literature reviewed from production and operations management, accounting and information systems journal articles.

This paper is concerned with the IT service organisation as defined in ITSM. IT service organisations include IT departments and units within organisations as well as managed service organisations that deliver outsourced IT services to their clients.

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ITSM Benefits and Performance Measurement
The literature review specific to ITSM benefits and performance measurement is grouped into two general categories of theoretical and empirical studies. This classification is necessary for organising the studies as well as comparing them and integrating common themes to understand the benefits and performance measures of ITSM. Theory in this paper applies to the continuum proposed by Schneberger et al. (2009) which has the actions of "academics who tend to stress scientific rigour in hypothesis measurement and analysis" on one extreme and the actions of "practitioners who might use 'hunches' as hypothesis, use 'seat of the pants' assessments, and focus solely on the situation at hand" on the other extreme. Academics stress rigour while practitioners stress relevance. Based on this classification the literature reviewed to date reveals ten empirical and eleven theoretical ITSM benefits and performance measurement studies. This paper uses the following definition of ITSM "Information Technology Service Management (ITSM) focuses on defining, managing, and delivering IT services to support business goals and customer needs, usually in IT Operations" (Conger, Winniford and Erickson-Harris 2008). This definition offers the perspective of customer and process orientation of IT services and the management of IT as a business.

The deficit of empirical research into ITSM benefits and performance measurement is due in part to a lack of a comprehensive framework for performance measurement for IT service management. The deficiency of empirical study in IS function performance measurement was observed by Chang and King (2005): "Only a few studies directly address the comprehensive evaluation of the performance of the IS function. No one has developed a validated metric".

ITSM Empirical Studies
The popularity of ITSM frameworks is not matched by measurement of benefits and performance and there is little research quantifying the benefits and performance measurement of ITSM implementation. In fact, the literature review to date yields only thirteen studies specifically on ITSM performance measurement frameworks published in academic journals and eight studies investigating benefits from ITSM implementation as shown in Table 1. The literature review shows a trend in research on ITSM starting with ITSM adoption and implementation studies, followed by ITSM benefits research and more recently a number of ITSM performance measurement studies. It is noted that the studies dealing with adoption and implementation also cover aspects of benefits and performance measurement and overlaps are evident. This activity is occurring in many different countries, as shown in Table 1 which provides a summary list of studies.

Table 1. ITSM Performance Measurement International Empirical Studies

Focus of Study	Location	Empirical Method	ITSM Benefits Identified	ITSM Performance Metrics Identified	Authors
ITSM Adoption and benefits measurement	Australia	Surveys and Case studies	1. improved focus on ITSM, 2. more rigorous control of testing and system changes, more predictable infrastructure, 3. improved consultation with IT groups within the organisation, 4. smoother negotiation of service level agreements, reduced server faults, 5. seamless end-to-end service, 6. documented and consistent IT processes across the organisation, 7. an effective change advisory board and consistent logging of incidents.		Cater-Steel and Tan 2005, Cater-Steel et al. 2007, 2008
ITIL Benefits – effectiveness	South Africa	Case study	1. customer satisfaction and 2. operational performance	SERVQUAL.	Potgieter et al. 2005
ITIL - Benefits, Costs and CSFs	Germany	Case Study	1. client/service orientation, 2. increased quality of IT services, 3. efficiency due to standardisation, 4. optimising of processes and 5. process automation; and transparency and comparability through process documentation and process monitoring.	Qualitative view of the advantages and disadvantages of implementing ITSM along ITIL from case studies using PROMET BECS method.	Hochstein et al. 2005
Measuring value of IT services	Czech Republic	Case study	1. business IT alignment.	Comparative approach metrics: comparisons of costs or the economic value added for two projects. Cost benefit approach metrics: net present value, return on investment and total cost of ownership. Using company output, business results and intermediate performance.	Šimková and Basl 2006
IT Performance Management	Germany	Case Study		IT BSC with 4 perspectives and 24 performance metrics.	Son et al. 2005

Focus of Study	Location	Empirical Method	ITSM Benefits Identified	ITSM Performance Metrics Identified	Authors
ITIL implementation – performance measurement	Germany	Case Study	1. improved alignment by staff partners and suppliers by a common sense of purpose, processes and terminology; 2. cost reduction through transparent processes; 3. compliance with the Service Level Agreements; and improved quality and consistency of service.	Increased service levels measured by Mean Time To Repair, Mean Time Between Failures, and aggregate downtime.	Koch et al. 2007
ITIL adoption using Actor Network Theory (ANT).	UK	Case Study	1. reduction of service outage over four years, 2. fewer incidents and problems, 3. 30 percent reduction in staff, and 4. improved customer satisfaction.		Cater-Steel and McBride 2007
ITIL performance measurement	Croatia	Case Study	1. improved quality of IT services provided to customers; 2. improved daily work procedures; 3. better employee satisfaction and 4. changed organisation culture.	List of key performance indicators (KPIs) for ITIL processes representing company goals.	Spremic et al. 2008
ITIL Measurement – using Six Sigma	USA	Case Study	1. reducing cost by minimising "potential downtime and the adverse effects of system, network, and application failures , 2. improving decision-making ability by facilitating 3. access to information throughout the organisation, and by enabling the enterprise wide use of outputs and 4. improving IT service levels by creating operational 5. efficiencies.	Six Sigma: Define, Measure, Analyse, Improve, and Control (DMAIC).	Chan et al. 2008
ITIL Benefits Realisation	Australia	Case Study	1. customer satisfaction improved for support availability, responsiveness and expertise, and 2. system performance, functionality and quality	BSC and CSFs extracted from literature on ERP implementation.	Tan et al. 2010
ITIL Adoption – benefits and maturity	USA & UK	Survey	1. as the level of maturity increases, so does the number of realised benefits.	More metrics used at later levels of maturity between defined and optimised.	Marrone and Kolbe 2010

A case study of a government agency in South Africa finds that both customer satisfaction and operational performance improve as the activities in the ITIL framework increase. The study uses SERVQUAL in a quantitative survey that includes qualitative questions, service centre call statistics and management interviews (Potgieter et al. 2005). This case study identifies the overall benefits from the ITSM implementation. Similar findings are reported from case studies of six German organisations by Hochstein et al. (2005a) that identify three benefits from ITIL: client/service orientation and the quality of IT services; efficiency due to standardisation, optimising of processes and process automation; and transparency and comparability through process documentation and process monitoring. These case studies identify process specific benefits from the ITSM implementations.

The research conducted by Hochstein et al. (2005a; 2005c) was replicated in fifteen organisations in Australia, United Kingdom and New Zealand and ITSM process specific benefits were identified (Cater-Steel and McBride 2007; Cater-Steel and Tan 2005; Cater-Steel, Tan and Toleman 2006a; 2009b; 2007; 2006b). Based on interviews with five Australian IT service managers, it is found that the benefits realised by ITIL include improved focus on IT service management, more rigorous control of testing and system changes, more predictable infrastructure, improved consultation with IT groups within the organisation, smoother negotiation of service level agreements, reduced server faults, seamless end-to-end service, documented and consistent IT processes across the organisation, an effective change advisory board, and consistent logging of incidents (Cater-Steel et al. 2006a).

Another ITSM process-specific benefits study using a case study of a German organisation shows the advantages of the introduction of an ITIL-based business process framework focusing on the change management process (Koch and Gierschner 2007). As well as confirming the ITIL benefits identified by Hochstein et al. and Cater-Steel et al. (improved alignment by staff, partners and suppliers by a common sense of purpose, processes and terminology) Koch and Gierschner add to the list cost reduction through transparent processes; compliance with the Service Level Agreements; and improved quality and consistency of service.

In a similar study on process-specific benefits, the ITIL implementation at a large UK-based financial institution resulted in a 65 percent reduction of service outage over four years, fewer incidents and problems, 30 percent reduction in staff, and improved customer satisfaction (Cater-Steel and McBride 2007). Their finding of reduced costs as an ITIL benefit confirms that of Potgieter et al. (2005). Similarly in a survey identifying ITSM process benefits of mainly UK and US organisations Marrone and Kolbe (2010) summarise the ITIL benefits identified in Potgieter et al. (2005), Hochstein et al. (2005a) and Cater-Steel et al. (2008). Their survey covers adoption, usage, implementation, maturity, effectiveness of processes and realised benefits. They conclude "that as the level of maturity increases, so does the number of realised benefits and on later levels of maturity, between defined and optimised, companies concentrate more on using metrics and on showing the realised benefits to the

business". These studies identify process specific benefits of the implemented ITSM framework.

A slightly different focus is taken by the following studies which describe measurement of overall ITSM benefits or process specific benefits of the ITSM implementation. Discussing how a performance measurement system may be designed and implemented with the purpose to monitor and improve the IT function in a case study at the European Central Bank, Son et al. (2005) extend the work of Martinsons et al. (1999). A performance measurement system for the IT function at the European Central Bank is described based on the IT Balanced Scorecard (IT BSC). Insight into developing a performance management system for an organisation using ITIL is provided by Son et al. (2005). They use a case study to show how the performance measurement system described in the article was implemented in a financial institution.

In a survey of IT management on both the public and private sector in the Czech Republic, measuring the overall ITSM benefits, the question of how to measure and improve the effectiveness of IT services is explored. The study finds that "it is difficult to provide a single recommendation about how to measure and what metrics to use because business executives have very different goals for IT and the context in which IT operates is a key factor that should be considered" (Šimková and Basl 2006). The paper suggests the use of several financial approaches to measure the benefits of ITIL which are categorised into comparative and cost benefit. Examples of comparative approaches given are comparisons of costs or the economic value added for two projects. The cost benefit approach examples include net present value, return on investment and total cost of ownership. Šimková and Basl focus exclusively on financial measures in determining the value of ITIL.

Two recent case studies focus on public sector organisations. In a case study of an Australian government department a "benefits realisation plan to track and communicate tangible and intangible benefits of the project" is identified as critical to the successful implementation of ITIL (Tan et al. 2010). Customer satisfaction improved for support availability, responsiveness and expertise, as well as system performance, functionality and quality. The department incorporates key metrics into their Balanced Scorecard (BSC) to track whether the implemented processes are meeting their intended targets. This case study demonstrates the use of the BSC to measure the benefits of an ITIL implementation project. A case study of a government owned Croatian finance sector organisation outlines direct and indirect benefits from ITIL implementation by comparing Key Performance Indicators (KPI) before and after the implementation of specific ITIL processes (Spremic et al. 2008). The benefits identified include improved quality of IT services provided to customers; improved daily work procedures; better employee satisfaction and changed organisation culture. This article extends the use of the BSC in ITSM to link the benefits and metrics in measuring the performance of ITSM.

A case study of General Electric (GE) shows how Six Sigma can be used to improve the ITSM implementation at GE (Chan et al. 2008). The paper notes that there is little research that is explicitly ITSM related though there is increasing research on isolated aspects of operations management. The paper concludes that Six Sigma should be used to make sure that ITSM is aligned with the customer and to provide the mechanism to deliver and monitor all the ITSM processes. Similar findings were reported by Aazadnia and Fasanghari (2008).

The review of empirical studies shows the interest and importance of ITSM performance measurement and demonstrates various attempts at understanding the implementation, benefits and performance measurement of ITSM. A summary is shown in Table 1.

ITSM Theoretical Studies
There are a few published theoretical research studies on ITSM benefits and performance measurement. A process reference model (PRM) and process assessment model (PAM) for ITIL service support and service delivery processes is developed in Luxembourg by Barafort et al. (2005). The PRM and PAM architecture are based on the international standard for process assessment ISO/IEC 15504 and include development of the process performance and process capability indicators for ITIL V2 processes.

To ensure the specific metrics developed are easily linked to higher level organisation objectives, we use a BSC approach (Kaplan and Norton 1992). Strategic measures can be viewed, not as performance indicators in four independent perspectives, but as a series of cause-and-effect linkages among objectives in the four BSC perspectives advise Kaplan and Norton (2004). Drawing a cause-and-effect linkage helps integrate the four perspectives. The BSC approach provides a common language for metrics and a bridge between IT and business as many senior business managers are familiar with it (Huchendorf 2005; van der Zee and de Jong 1999). The BSC is one of the most widely adopted performance management methodologies (Praeg and Schnabel 2006). BSC uses a mix of financial and non-financial indicators for performance measurement and management to plan, execute and monitor business strategies. The BSC approach recognises the limitations of purely financial measurement and is based on four dimensions: customer, financial, internal business, and innovation and learning. Each perspective has goals and measures.

The BSC is successfully used in theoretical studies by many other ITSM researchers such as Donko and Traljic (2009), Huchendorf (2005), Moura et al. (2006), Praeg et al. (2006) and van der Zee and de Jong (1999).

The benefits of using the BSC approach for IT management arise from "an integrated planning and evaluation cycle … business and IT management can use the same performance measurement language" (van der Zee and de Jong 1999). They come to this conclusion by using two case studies to show that the balanced business scorecard

is a valuable contributor to the implementation of an integrated business and IT planning and evaluation process.

The BSC and CobiT are proposed by Grembergen et al. (2003) as supporting mechanisms to help organisations develop balanced Service Level Agreements (SLA). They advise that both objective and subjective metrics should be used in SLAs to avoid "furious and endless discussions between the service provider and the organisation".

The ITIL performance metrics and causal linkages between the measures are derived from information gathered from IT professionals of leading-edge companies. The performance metrics matrix is developed by "mapping out the visual linkages of the measures; developing the causal model and identifying the linkages between variables; populating the model with data; estimating the parameters of the model; and revising the model metrics and causal relationships". This paper uses a similar methodology to that used by Huchendorf in working with a panel of industry experts to develop the questionnaire. A panel of experts is also used by McNaughton et al. (2010) to evaluate the performance framework used.

An evaluation catalogue for an IT service cachet of 48 assessment criteria is developed by Praeg and Schnabel (2006) to evaluate the quality of outsourced IT services. The study places importance on value based management using economic value added measures similar to Šimková and Basl (2006). Like many of the other studies it also identifies the BSC as an important and often used performance measurement method. The IT service cachet extends the concepts of the BSC and SERVQUAL and is presented in 10 dimensions of IT service performance quality indicators. Their framework is divided into four different levels: strategic level, business process level, IT service level and tool level. A methodology to assess the business value from IT service management similar to Praeg and Schnabel (2006) and Šimková and Basl (2006) is proposed by Yixin and Bhattacharya (2008). The methodology provides business value estimates using the change management process in the context of specific product capabilities and complexity based quantitative metrics. They illustrate their methodology using the change management process of IBM Tivoli Unified Process (ITUP). Their performance measurement method comprises four steps: identify process context, prepare baseline quantification, estimate process improvement and estimate business value.

In a framework with multiple levels similar to that of Praeg and Schnabel (2006) the use of financial loss functions to estimate the impact of IT Service Level Agreements is proposed by Moura et al. (2006). They use an organising framework based on BSC concepts to firstly tie those functions to business processes then measure the impact of service levels on business performance finally eliciting investment targets. The outcome of their paper is a quantitative approach for "allocating IT investments to reduce potential financial loss". The framework developed by Moura et al. consists of three layers: IT services layer; business processes layer; and business layer. A trial of the model conducted on a drugstore chain in Brazil resulted in the top management of

the store considering the model useful for improving decisions. The BSC and the framework developed by Moura et al. (2006) are applied by Donko and Traljic (2009) to the efficiency and effectiveness measurement of service operation as part of the ITIL life cycle. The authors propose an IT service effectiveness framework aligned to an organisation's strategic plan with metrics developed. The paper uses the BSC to establish a linkage between IT and business processes. After a detailed analysis of the incident management process the paper develops quantifiable performance objectives using the BSC perspectives to ask key ITIL performance questions. Their framework proposes that service degradation at the IT services layer leads to poor performance at the business process layer resulting in business loss at the business layer. KPIs developed along the BSC perspective are then shown to ultimately contribute to three types of possible loss: financial, user trust and credibility.

The Actor Network Theory (ANT) is used in explaining the adoption of ITSM by Cater-Steel and McBride (2007) and in further application of theory to ITSM performance measurement the Resource Based View (RBV) and Normatively Regulated Activities (NRA) theories are used in addition to the BSC. A case study applying the Resource Based View (RBV) to ITIL finds that the ITIL framework can be seen under a RBV lens based on "learning loops to master the use of resources, create efficient work practices, and develop patterns of activity among the human capital of a firm which embed the knowledge acquired by the learning processes" (Wagner 2006). The theory of Normatively Regulated Activities (NRA) has been associated with basic ITSM activities by Donko and Traljic (2006). They explain that "normatively regulated activities are characterised by precise objective or purpose, participation of actors as role-holders, and norms and rules that govern the performance of these activities". Donko and Traljic propose that NRA measures of action performance used in planning and performance of activity are associated with ITSM processes. The performance measures describe the criteria of quality: efficiency of the realisation; effectiveness of the realisation; and regularity of the action.

Using common elements from existing frameworks an evaluation framework for ITSM improvement efforts with particular focus on ITIL version 2 is developed by McNaughton et al. (2010). They state that their goal is "a holistic, prescriptive, multi-dimensional framework with both objective and subjective means of assessing ITIL benefits from a variety of perspectives". They design the framework by combining common elements from potential evaluation frameworks for ITIL such as itSMF/OGC ITIL Assessment Tool, IS Adapted SERVQUAL, IT Service Capability Maturity Model, IT BSC, Stakeholder process approach and criteria catalogue method expanding some elements to make them more prescriptive and specific to ITIL. After assessing, testing and expert evaluation they conclude that their framework "aids in performance assessment, benefits realisation, finding areas for IT service improvement, and directing resources". A key difference of their evaluation framework with our evaluation framework is that we measure the benefits and outcomes of the overall process rather than specific performance metrics.

To classify previous theoretical studies on ITSM benefits and performance measurement, the taxonomy of IS theory developed by Gregor (2006) is applied. IS theories are classified into five types: theory for analysing; theory for explaining; theory for predicting; theory for explaining and predicting; and theory for design and action. The studies are summarised and classified in Table 2.

Although a phenomenal adoption of ITSM frameworks, particularly ITIL, is observed, it is not accompanied by standardisation of ITSM performance measurement. A standardised performance measurement framework is required and this research project is an important step in addressing that need. To improve IT service management, it is necessary to measure and evaluate process performance. Processes must be measurable in order to be controlled and improved (Praeg and Schnabel 2006). It is critical that the measurement framework is rigorously defined. According to Paxson (1996), the three key notions for any measurement framework are: *metric* – the fundamental property we wish to measure; *method* – the way to attempt to measure the property; and *measurement* – the result of a specific application of the method. A sense of the challenge of ITSM performance measurement is captured by Yixin and Bhattacharya (2008) who state "as today's IT service providers have very little visibility on their entire value network, it is hard to gauge the impact of singular process improvements".

METHOD
For this paper, the results of a survey of itSMF members in Australia are analysed and compared with results from a similar study in the UK and USA. A survey of the entire itSMF Australia population is used followed by quantitative and qualitative analysis of the data collected. The quantitative analysis uses descriptive statistics. There is also use of qualitative techniques consisting of three concurrent flows of activity: data reduction, data display and conclusion drawing as advised by Miles and Huberman (1994). The qualitative analysis of the data is done along the BSC perspectives.

Design of the Australian survey
With support from itSMF Australia a survey of itSMF Australia members was conducted in December 2009. A survey is a feasible means of providing data for any study investigating the state of practice (Wilson, Petocz and Roiter 1995). In this case the survey provides a broad industry-wide snapshot of benefits and performance measurement for organisations implementing ITSM in Australia.

In compiling the survey questionnaire, academic and industry literature was reviewed to ensure rigour as well as relevance. The questionnaire was designed to answer the first two research questions of a three year study developing a performance measurement framework for ITSM: (RQ1) *What types of benefits are reported from IT service management (ITSM) improvement initiatives by organisations?*; and (RQ2) *Which specific metrics can be used to measure ITSM performance and how can these metrics be derived?*

Table 2. ITSM Performance Measurement Theoretical Studies

Purpose of Theory	Location	Research Approach	ITSM Benefits Identified	ITSM Performance Metrics Identified	Authors
Analysing	Europe	Conceptual: Resource Based View of ITIL	1. master the use of resources, 2. create efficient work practices, and 3. develop patterns of activity among the human capital of a firm which embed the knowledge acquired by the learning processes.	Using incident management Resource Based View (RBV)	Wagner 2006
Explaining	Luxembourg	Conceptual: Process Assessment Model (ISO 15504) for ITIL	1. an improvement of the service quality, 2. more reliable business support, 3. a clearer view of current IT capability, 4. a better information on current services, 5. a greater flexibility for the business through improved understanding of IT support, 6. enhanced customer satisfaction.	ISO/IEC 15504 and ITIL Process Reference Model (PRM) and Process Assesment Model (PAM).	Barafort et al. 2005
	USA	Quantitative: Process Complexity Analysis to estimate the value of ITIL	1. labour cost reduction 2. service fulfillment savings 3. service quality improvements.	Using the ITUP change management process Value estimates quantifying process baseline with typical task execution time and underlying complexity,	Yixin and Bhattacharya 2008
	Czech Republic	Conceptual: Theory of NRA applied to ITIL	1. to assist activity actors to achieve more efficiency and effectiveness, 2. to help in the realisation of regular activities.	Using service level management SLA Efficiency of the realisation; effectiveness of the realisation; and regularity of the action.	Donko and Traljic 2006
	Belgium	Conceptual: CobiT and BSC on SLM	1. cearly defined service levels.	Using service level management metrics based on COBiT and BSC	Grembergen et al. 2003
Explaining and predicting	USA	Quantitative approach to BSC on ITIL	1. service improvement, 2. return on investment.	BSC based ITIL dimensions and causal linkages between dimensions built on regression analysis.	Huchendorf 2005

Design and action	Germany	Conceptual framework for IT service performance management using the BSC	1. improved service quality, 2. customer satisfaction.	Cachet of 48 assessment criteria based on modified SERVQUAL and the BSC	Praeg and Schnabel 2006
	Brazil	Quantitative approach to BSC on ITIL	1. providing efficient and cost effective service.	Using Service Level Management Measurement of investment of IT using the IT loss function by measuring at three layers: IT services layer; business processes layer; and business layer.	Moura et al. 2006
	Czech Republic	Quantitative approach to BSC on ITIL	1. service improvement along the four BSC perspectives	Loss caused by service degradation measured by loss of financial, user trust and credibility	Donko and Traljic 2009
	Australia	ITIL Evaluation Framework using Design Science	1. alignment of IT services with current and probable future business needs, 2. improved quality of IT services, and 3. a reduction in the long term costs of service provision.	Using incident management Effectiveness, Capability and Efficiency using the BSC.	McNaughton et al. 2010

The questionnaire had four sections: (a) Your organisation; (b) ITSM Processes; (c) ITSM benefits measurement; and (d) ITSM Challenges. For section (a) the questionnaire used demographic questions from previous ITIL adoption surveys for ease of comparison and standardisation (Cater-Steel and Tan 2005; Cater-Steel et al. 2007; 2008; 2009a). In section (b) respondents were asked to select the ITSM framework implemented from the options of ITIL V2, ITIL V3, Microsoft Operation Framework (MOF®), IBM Service Management Reference Model (IBM® SMRM), HP IT Service Management Model (HP® ITSM) and given the option to specify other ITSM frameworks. Section (b) also included questions on specific ITSM processes, process specific benefits and key benefits from the overall ITSM implementation. The questions on the key benefits from the overall ITSM implementation had a list of choices organised into five sections sourced from the Office of Government Commerce classification of service management benefits similar to the four BSC perspectives (OGC 2002; 2007). The sections were "business benefits, financial benefits, employee benefits, innovation benefits and internal benefits". In section (d) questions on the single biggest challenge in measuring and reporting ITSM were asked. A sample of the survey questions can be seen in the Appendix.

Conducting the Australian Survey
After reviews from a panel of experts drawn from the public and private sectors in Australia and a leading international ITIL expert (Dr. Jenny Dugmore) the questionnaire was revised into a more precise electronic version. The questions, structure and length of questionnaire were then compared with other ITIL surveys (Bruton 2004; Marrone 2009). The questionnaire was pilot tested by five randomly selected ITSM industry managers and three ITSM academics. The pre-test of the questionnaire by an industry panel of experts and academic researchers ensured construct validity (Iman and Conover 1983). It was ensured that no part of the population was omitted by emailing all members of the population. The respondents were characterised as understanding ITSM concepts and are knowledgeable in the subject. The electronic questionnaire was distributed by itSMF Australia to all its 2085 members via e-mail with a link to the questionnaire. In total 263 members attempted the online survey, with 215 usable responses obtained. The target population of the survey was the itSMF Australia members. The survey unit of analysis was the itSMF Australia members. We had advance knowledge of the population characteristics from itSMF Australia. There was little variability in the target population and the respondents in terms of subscription to the idea of ITSM as an approach to managing IT operations.

These responses were transferred from the online survey tool, Survey Monkey to MS Excel® then SPSS® for analysis.

Following data collection, qualitative data analysis was conducted in three flows of activities: data reduction, data display and conclusion drawing/verification (Miles and Huberman 1994)

The written responses to the key benefits from the overall ITSM implementation and the single biggest challenge in measuring and reporting ITSM were first analysed, then aggregated along themes and mapped to the BSC perspectives. In mapping the responses the following questions posed by the OGC (2007) on the BSC perspectives were used to categorise the responses:

1. Customers – What do customers expect of IT provision?
2. Internal processes – What must IT excel at?
3. Learning and growth – How does IT guarantee that the business will keep generating added value in the future?
4. Financial – What is the cost of IT?

International Comparison
The UK/USA Marrone (2009) study was analysed to identify constructs in common with the Australian study. The comparison considered the distribution of ITIL users, process implementations, benefits and performance measurement. Process maturity in the UK/USA survey was used as a proxy for measurement as maturity level four is assumed to include metrics.

RESULTS FROM AUSTRALIAN SURVEY
The survey achieved a response rate of 10 percent. MS Excel® and SPSS® software were used for descriptive data analysis and presentation of the survey responses to provide a valuable snapshot of the types of benefits measured and reported for each of the ITSM processes.

Demographics
The respondents were drawn from the corporate (73%), individual (23%) and vendor (4%) categories of itSMF Australia members The respondents represent a wide cross section of organisation positions. More than half of the respondents are managers, Service Manager (20%), IT Manager (19%), other Manager (14%), Project Manager (4%) and Operations Manager (3%). Fourteen percent of the respondents are consultants. Six percent of the respondents are technical experts while the five percent were grouped into other positions category.

Analysis of the email addresses voluntarily provided by respondents revealed that in a small number of cases, multiple questionnaires were returned from some large organisations. As the respondents worked in different ITSM roles and different locations it was decided to include these questionnaires as benefits derived and metrics used were essentially unique for each respondent.

ITSM Frameworks Adopted
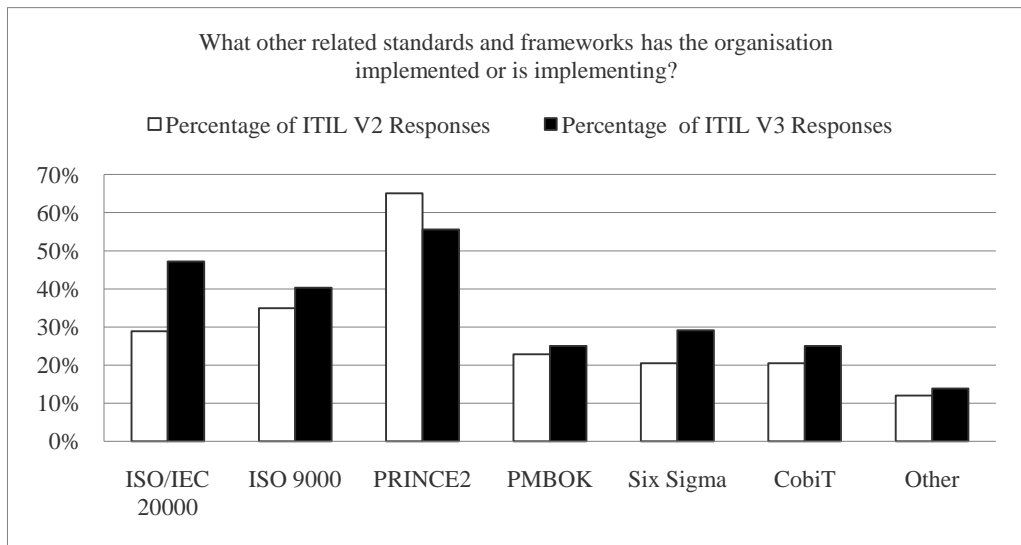The survey reported ITIL as the dominant ITSM framework used by 95 percent of respondents with a slight majority (53%) selecting ITIL V2 over V3 (42%). Some of the other ITSM frameworks reported include Microsoft Operations Framework and HP IT Service Management Reference Model. A small number of respondents indicated using customised ITSM based on leading frameworks. It was interesting to

observe the robust uptake of ITIL V3 which was only released in 2007 and in two years it is virtually on par with ITIL V2 implementations. It was also informative to note that the vast majority of itSMF Australia members use ITIL as opposed to alterative proprietary ITSM frameworks.

The other leading standards and frameworks implemented along with ITIL were PRINCE2® (61%), ISO 9000 (37%), and ISO/IEC 20000 (37%) followed by PMBOK®, Six Sigma and CobiT® as shown in Figure 1. Other frameworks reported related to auditing, governance, health and safety, environmental management and security.

It is noteworthy that the vast majority of itSMF Australia members selected PRINCE2 for project management rather than PMBOK. This can be attributed to the fact that PRINCE2 and ITIL are stable mates of the OGC. It is also remarkable to observe the rapid uptake of the ISO/IEC 20000 standard published in 2005 making it the newest of the alternatives on offer.


What other related standards and frameworks has the organisation implemented or is implementing?

□ Percentage of ITIL V2 Responses   ■ Percentage of ITIL V3 Responses

Figure 1. Comparison of V2 and V3 Responses Showing Proportion of Related Frameworks

 Performance Measurement and Maturity Frameworks
Organisations in both the public and private sectors in Australia have invested in a variety of initiatives related to service management, governance and quality management.

The Australian survey showed that the BSC was the most popular performance measurement or maturity framework used by itSMF Australia members. This is consistent with the global trend identified in the literature review where the BSC is reported as the most widely adopted performance measurement framework (Praeg and

Schnabel 2006). The second and third largest number of members selected "not applicable" and "do not know" to the same question. This is a significant observation as these responses may be symptomatic of the challenge identified of measuring the performance of IT service management (Dadayan 2006; Seddon, Graeser and Willcocks 2002; Šimková and Basl 2006). The IT BSC and CMMI® were also widely used while ISO/IEC 15504 (IT Process Assessment) and CMMI® for Services were barely applied. A wide variety of other responses included maturity self assessments, organisation-specific and contract-based assessments. Figure 2 shows the distribution of responses for performance measurement and maturity frameworks for ITIL V2 and V3 users.
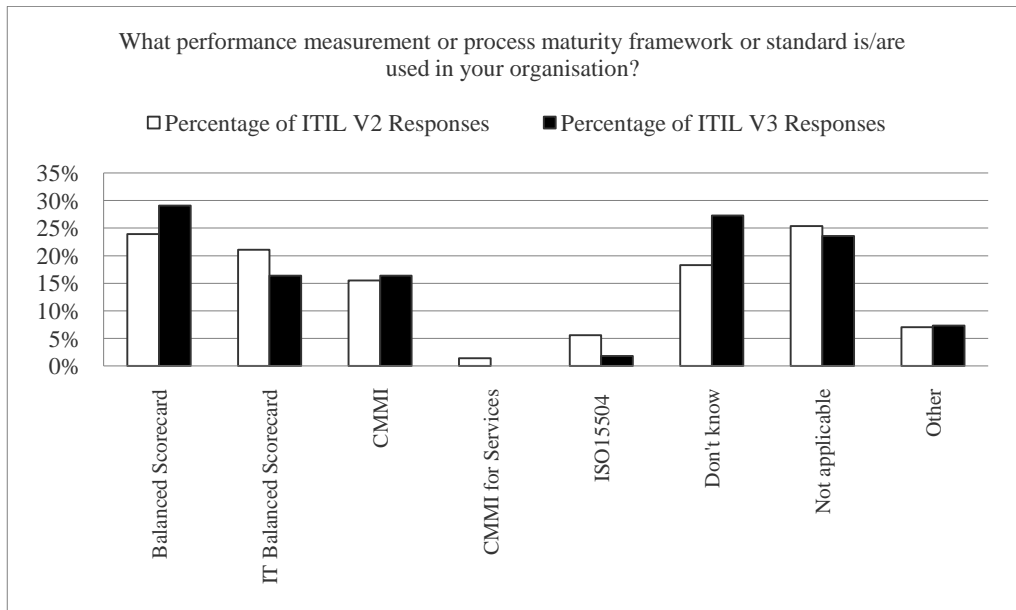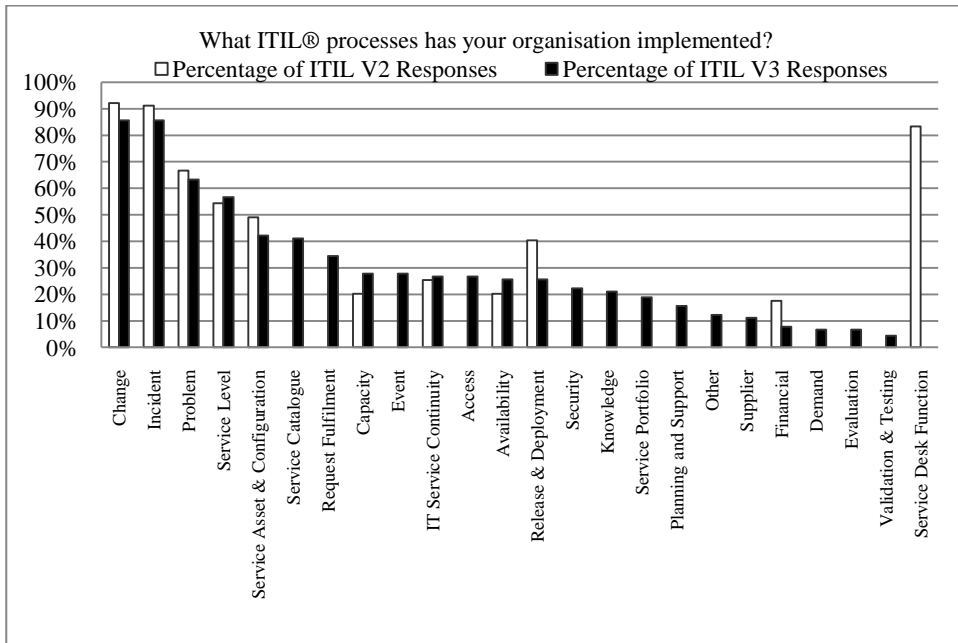

Figure 2. Comparison of V2 and V3 Responses Showing Proportion of Performance Measurement and Maturity Frameworks

Adoption of ITIL Processes
Figure 3 shows which processes have been adopted by ITIL V2 and V3 users. Change management (92%) closely followed by incident management (91%) were the top two processes implemented by those using ITIL V2. This was comparable to those using ITIL V3: change management (85%) and incident management (85%). This was not unexpected as it has been a common finding in previous ITIL surveys (Marrone 2009). What is of interest on inspection is the low adoption rate of the other ITIL processes despite the advice that greater benefit would be achieved from implementing all the processes. According to the OGC (2002) "the true value of implementing all of the Service Management processes is far greater than the sum of the individual processes. All the processes interrelate with the other processes and in
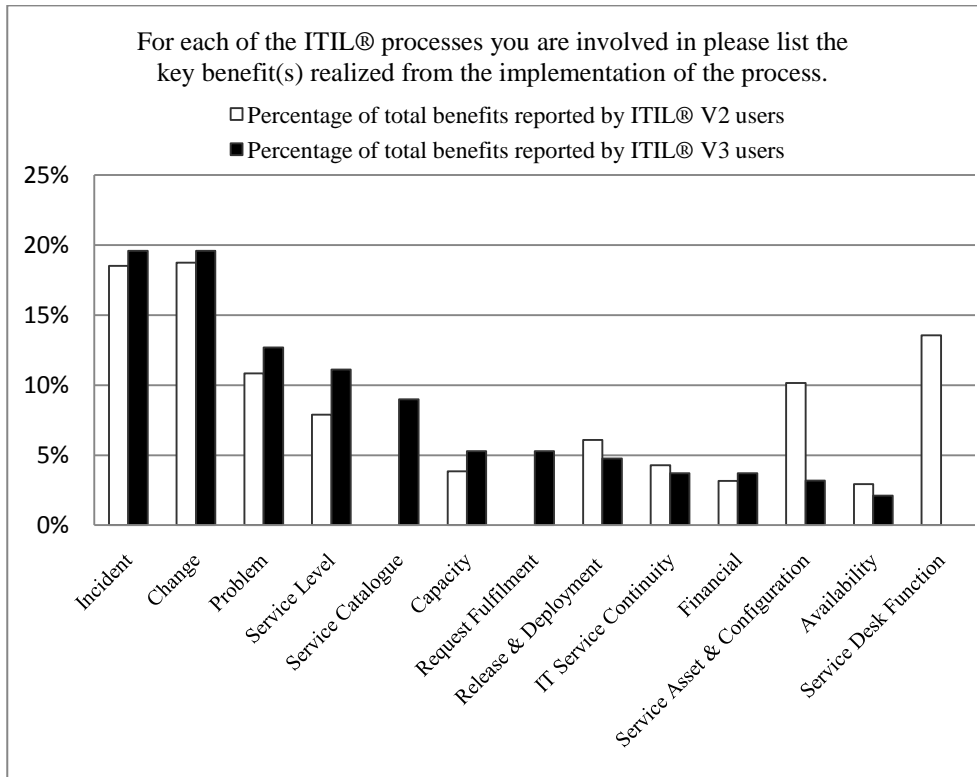
some cases are totally dependent on others". For example for change management to be fully beneficial configuration management would need to be in place.

Figure 3. Comparison of ITIL V2 and V3 Responses Showing Proportion of ITIL Processes Implemented

ITSM Process Benefits
The survey evoked a rich response of benefits with a total of 677 benefits recorded. This shows that the respondents had no difficulty articulating benefits realised from the ITIL implementations for some processes more so than others, for example a total of 119 responses were reported for incident management while at the other extreme 17 were reported for availability management. The vast majority of benefits reported were from incident management and change management as shown in Figure 4. These two processes also had the highest responses listed with some respondents listing more than one benefit. Examples of reported incident management process benefits include "improved service availability" and "better resource utilisation". Examples of reported change management benefits include "changes reviewed for business benefit and approved" and "greater certainty about what is in production".

For each of the ITIL® processes you are involved in please list the key benefit(s) realized from the implementation of the process.

☐ Percentage of total benefits reported by ITIL® V2 users
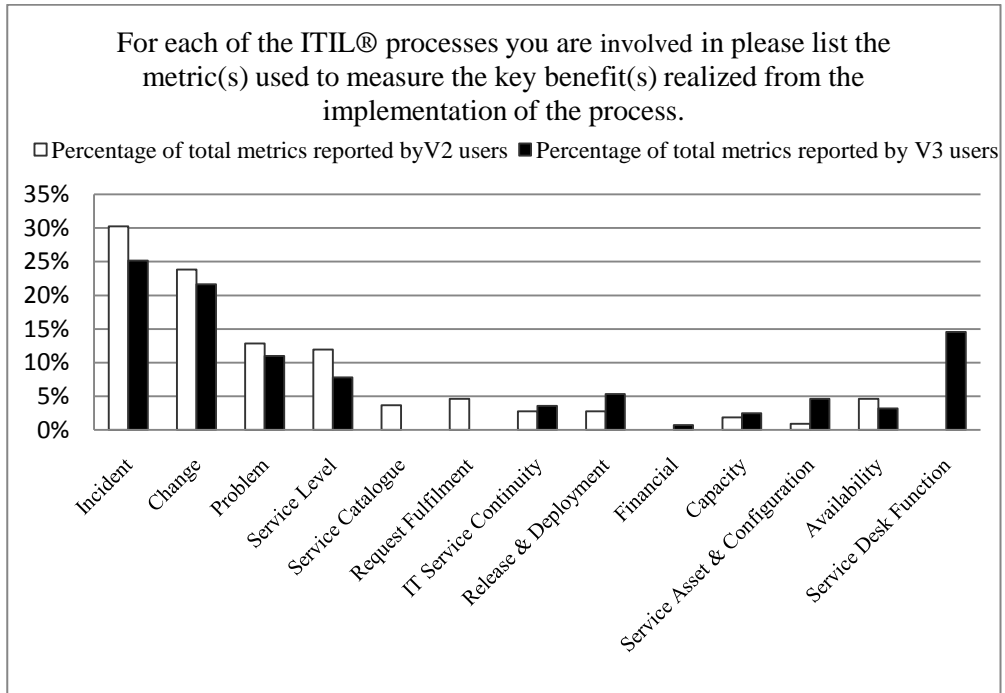■ Percentage of total benefits reported by ITIL® V3 users

Figure 4. Comparison of ITIL V2 and V3 Responses Showing Proportion of Benefits for each ITIL Process

ITSM Process Metrics

There were a total of 406 responses for metrics in use for implemented ITIL processes. Almost all respondents reported specific metrics related to incident management as shown in Figure 5. Examples of metrics reported for incident management (104 responses) include "addressing specific types of frequent incidents to avoid re-occurrence" and "Incidents resolved within SLA". Strong metric practice was also recorded for change management (87 responses) for example "number of incidents with cause code of change" and "unplanned outages against planned outages". The metrics reported followed a similar pattern to the benefits for processes implemented with at least one metric for each reported benefit and process. It appears that the reported benefits were supported by metrics at the process level. It is worth mentioning that the metrics validated claims of benefits by providing evidence of measurement with a number of respondents listing more than one metric per process and some respondents providing a link between the benefit and metric for example, Benefit: "rapid incident resolution"; Metric: "closed 1st point and aged outstanding". Another interesting observation was that there was almost twice as many recorded benefits for ITIL V2 processes as there were for ITIL V3 processes though there were almost an equal proportion of respondents implementing both versions of ITIL. For

example ITIL V2 incident management had 71 metrics reported while ITIL V3 had 33 for the same process. This may indicate that those implementing ITIL V3 are still struggling to identify benefits and metrics when compared to their ITIL V2 counterparts or that they may be new ITSM implementations and the organisations are at initial maturity levels.
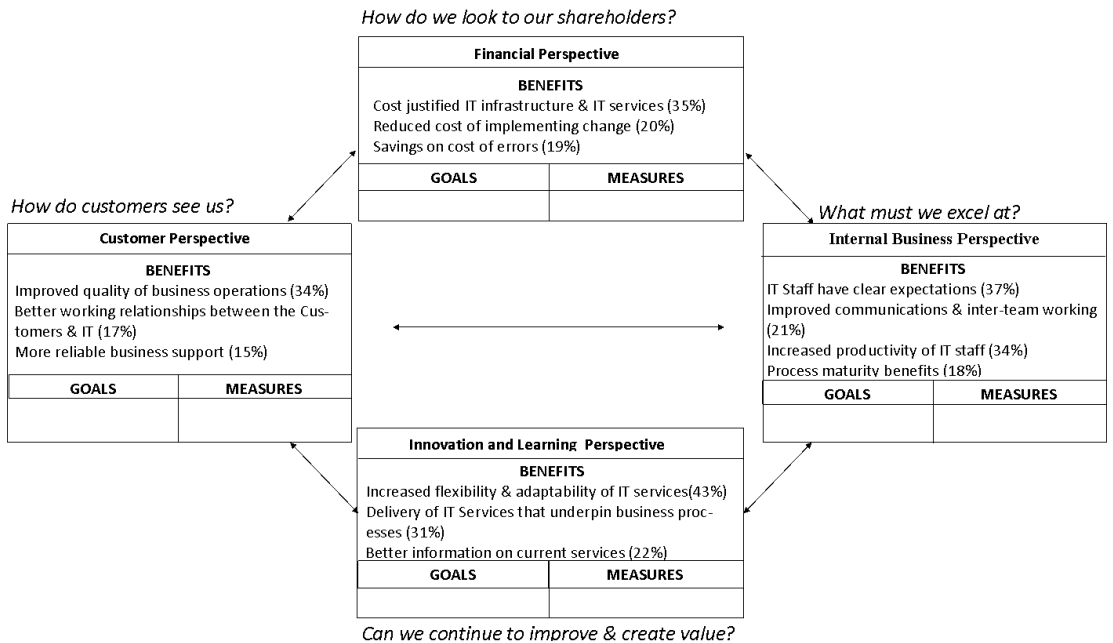

For each of the ITIL® processes you are involved in please list the metric(s) used to measure the key benefit(s) realized from the implementation of the process.

□ Percentage of total metrics reported by V2 users ■ Percentage of total metrics reported by V3 users

Figure 5. Comparison of ITIL V2 and V3 Responses Showing Proportion of Metrics Used to Measure Benefits Realised for Each ITIL Process

BSC Perspective for ITSM

The questions on the key benefits from the overall ITSM implementation had a list of choices organised into five sections taken from the OGC (2002; 2007) classification of service management benefits similar to the four BSC perspectives. The key benefits were further analysed along the four perspectives of the BSC: finance, customer, internal business, innovation and learning. Although the Kaplan and Norton (1992) BSC depicts goals and measures we decided to extend the BSC structure to report benefits because the organisations' strategic goals are linked to the measures through the benefits. The key benefits of the ITSM implementation reported are presented as Figure 6 in an extended BSC that not only shows the performance measures but includes the benefits. The ITSM goals and measures to complement the ITSM benefits are left blank at this stage and will be determined in the second stage of the three year study.

When asked what the key benefits from the overall ITSM implementation were 43 percent selected "increased flexibility and adaptability of IT services"; 37 percent selected "IT staff have clear expectations"; 35 percent selected "cost justified IT infrastructure and IT services"; and 34 percent selected "improved quality of business operations".

The responses were aggregated and classified along the BSC perspectives as represented in Figure 6.

How do we look to our shareholders?

Financial Perspective

BENEFITS
Cost justified IT infrastructure & IT services (35%)
Reduced cost of implementing change (20%)
Savings on cost of errors (19%)

GOALS	MEASURES

How do customers see us?

Customer Perspective

BENEFITS
Improved quality of business operations (34%)
Better working relationships between the Customers & IT (17%)
More reliable business support (15%)

GOALS	MEASURES

What must we excel at?

Internal Business Perspective

BENEFITS
IT Staff have clear expectations (37%)
Improved communications & inter-team working (21%)
Increased productivity of IT staff (34%)
Process maturity benefits (18%)

GOALS	MEASURES

Innovation and Learning Perspective

BENEFITS
Increased flexibility & adaptability of IT services(43%)
Delivery of IT Services that underpin business processes (31%)
Better information on current services (22%)

GOALS	MEASURES

Can we continue to improve & create value?

Note: goals and measures will be populated in the model in future studies

Figure 6. BSC Perspective of ITIL Benefits

Summary of Australian Survey Findings
The results from the Australian survey indicate a readiness to adopt the latest version of ITIL V3. The adoption rate of individual ITIL components is uneven. Although the majority have adopted change, incident, problem, and service level management and the service desk function, other essential processes such as capacity and availability management are not widely adopted. A systematic approach to performance management is reported by only half the respondents, many of whom use the BSC. The others either do not know if their organisation uses a performance management framework, or do not think it applies to their organisation. Despite this lack of awareness, respondents were able to articulate the benefits of the processes, and backed this up with specific metrics. In terms of overall benefits from ITSM adoption, a variety of benefits were reported, in particular, increased flexibility and adaptability

of IT services, clarity of expectations of IT staff, cost justification of IT infrastructure and IT services, and improved quality of business operations. Most measuring and reporting challenges stem from either the internal business or customer perspective and can be explained by difficulties in managing stakeholder perceptions, identifying intangible benefits, and the time delay between improving processes and measuring the outcomes.

INTERNATIONAL COMPARISON

In a study of ITIL adoption in the UK/USA, Marrone (2009) reported on ITIL implemented processes, ITIL maturity and ITIL benefits realised. The online survey was conducted between April and May 2009 and attracted 503 respondents mainly from the UK/USA. The main purpose of the survey (Marrone 2009) was to determine "how wide, or not, the adoption of ITIL V3 was within the marketplace, and what the main drivers for ITIL adoption were for this". Although the focus of the two surveys was slightly different, there is sufficient overlap in the data collected to provide an International comparison of adoption, benefits and measurement between Australia and the UK/USA responses. The two surveys both report on implementation, benefits and performance measurement though the UK/USA survey lays emphasis on adoption while the Australian survey focuses on performance measurement. The two surveys were conducted within eight months providing a good opportunity to compare the results.
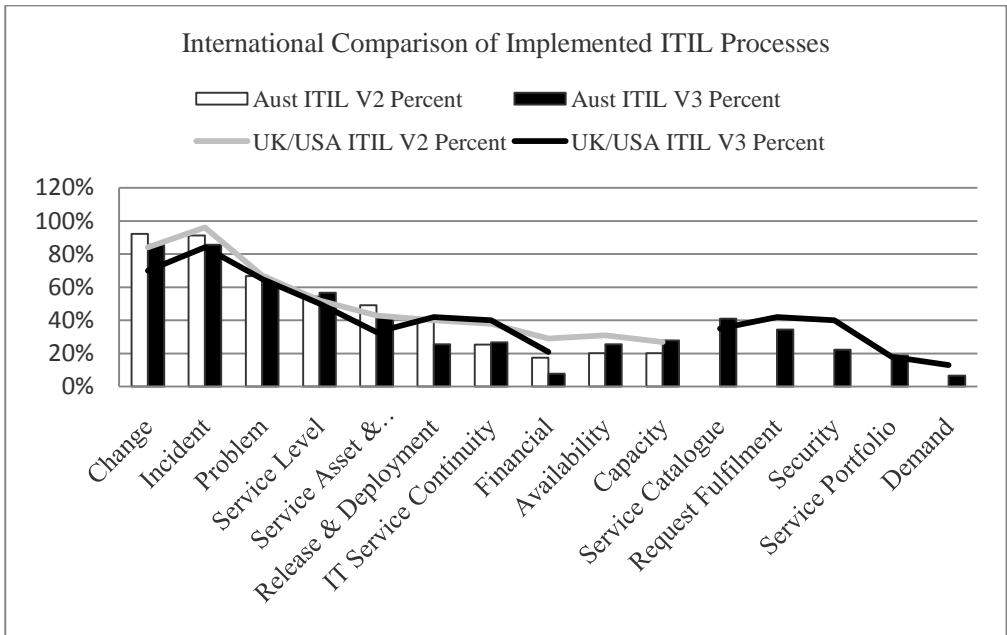
ITIL Implementation

The UK/USA population was exactly the same as the Australian population in terms of the proportion implementing ITIL V2 and V3 as shown in Table 3. In the time since the ITIL V3 books were published and widely promoted in 2007 it has been widely adopted. In a period of two years there are almost as many organisations implementing ITIL V3 as those still using ITIL V2.

Table 3. Proportion of Responses of ITIL®V2 and V3 Implementations in

Australia, UK and US

Location	Number of Responses	ITIL V2	ITIL V3
Australia	204	56%	44%
UK/USA	503	56%	44%

The most commonly implemented processes for ITIL V2 and V3 both in Australia and UK/USA were incident management and change management as shown in Figure 7.

Figure 7. Comparison of ITIL V2 and V3 Responses Showing Proportion of Responses by Processes implemented in Australia, UK and USA

To compare the population in Australia with the UK/USA population, the adoption rates for each process were compared using the Wilcoxon Mann-Whitney Test. There was no significant difference in the adoption pattern for either ITIL V2 or V3 users. Therefore, it is expected that the findings from the Australian survey can be generalised to the wider international community.

Although the adoption pattern is very similar to that in the UK/USA survey, some disparity is observed. ITIL V3 implementations from Australia had change management, service catalogue and service level management ahead of the UK/USA but trailed UK/USA ITIL V3 implementations in release and deployment, security management, request fulfilment, IT service continuity management, financial management and availability. The ITIL V2 implementations had their dissimilarities with Australia leading the UK/USA in change management, service asset and configuration management but lagging behind in incident, IT service continuity management, financial management and capacity management.

ITIL Measurement Practices

In the UK/USA survey when asked which statement best describes their ITIL process maturity only 12 percent of the respondents selected "very high level maturity; processes backed by metrics and continually improved". This finding compares to the Australian results where the largest group (40%) responded "do not know" or "not applicable" when asked what performance measurement or maturity framework their organisation implemented. Exploring this further in the UK/USA survey, change

management followed by incident management were considered to have the highest process maturity. Using maturity level as a proxy for performance measurement it can be taken that mature processes (level four or five) will include performance measurement. Our findings in the Australian survey concurred with the UK/USA data as the processes with the most number of metrics were incident management and change management. As processes become more widely adopted throughout the IT industry, it follows that metrics associated with those processes will become more sophisticated.

Benefits from ITIL Adoption

When asked what benefits have been realised from implementing ITIL, respondents in the UK/USA surveys selected service quality (66%), standardised process adoption (58%) and customer satisfaction (48%) as the top benefits. These are similar to those reported from the Australian survey: increased flexibility and adaptability of IT services; clarity of expectations of IT staff; cost justification of IT infrastructure and IT services; and improved quality of business operations. The benefits identified confirm the findings of Potgieter et al. (2005), Tan et al. (2010), Cater-Steel et al. (2006a; 2006b), Hochstein et al. (2005a) and Koch and Gierschner (2007) .

When the various benefits from both surveys are mapped to the BSC perspectives, the comparison reveals similarities in terms of the benefits reported along the financial, customer and business perspectives but variance along the innovation and learning perspective, as depicted in Figure 8. For the financial perspective, although both cohorts mentioned cost justification/return on investment, this benefit was more strongly reported by the Australian group. In terms of the customer perspective, the UK/USA respondents stressed service quality whereas one third of the Australians saw the key benefit as improvement in the quality of business operations. For the internal business perspective, the UK/USA group strongly endorsed the benefits of standardised processes which would contribute to the clarity of expectations of IT staff reported by more than one third of the Australian group. Taking the innovation and learning perspective, almost half the Australian cohort believed that ITSM provided increased flexibility and adaptability of IT services whereas two thirds of the UK/USA group were convinced of the benefits of applying the best practice experiences of others.

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                        ┌─────────────────────────────────────────────┐
                        │            Financial Perspective            │
                        ├──────────────────────┬──────────────────────┤
                        │ AUSTRALIA            │ UK/USA               │
                        │ Cost justified IT    │ Return on IT spending│
                        │ infrastruc-ture &    │ (15%)                │
                        │ IT services (35%)    │                      │
                        └──────────────────────┴──────────────────────┘
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Note: multiple responses for overall benefits were recorded by respondents

**Figure 8. BSC Perspective of the Comparison of Overall ITIL Benefits –
Australia vs. UK /USA**

In summary, the comparison of the results from the Australian and UK/USA surveys revealed similarities in the proportion of ITIL V2/V3 users, in the selection of ITIL processes and functions implemented, in the limited awareness of performance measurement frameworks, and in the overall benefits from ITIL adoption.

CONCLUSIONS

ITSM Measurement Challenges
In this paper we reviewed academic literature on ITSM performance measurement. From the literature review it is evident that there is a global interest in measuring the benefits of ITSM. The empirical surveys and case studies from all continents: Asia, Africa, North America, South America, Europe, and Australia provide a global list of identified benefits and implementation patterns for ITSM. The international theoretical studies reviewed provide a rich variety of different theories and models that can be applied in measuring the effectiveness of ITSM such as BSC, SERVQUAL, RBV, NRA, Complexity Analysis and Financial Loss Functions. The theoretical and empirical literature review provided an appreciation of the importance of ITSM performance measurement and benefit realisation as evidenced by the international attention it is receiving. The global literature review also highlights the theoretical and practical challenges of ITSM performance measurement.

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A key finding in this paper came from the Australian survey where many benefits supported by metrics at the process level were reported. Although respondents could list benefits and metrics for the survey, they encountered many difficulties in measuring and reporting benefits in their organisations. Measurement problems may be associated with the observation made that almost half the respondents are not using performance measurement frameworks given the numerous responses of "not applicable" or "do not know" when asked about performance measurement frameworks in use.

The comparative analysis of the Australian and UK/USA studies reveals the rapid adoption of ITIL V3 which could be accounted for by either transition from ITIL V2 or new ITIL users. Growing interest in the international standard ISO/IEC 20000 was also evidenced by both surveys.

Both surveys revealed that organisations are not maximising the return on their investment in ITIL because they are selecting a couple of processes for "quick wins" and not implementing and integrating all the processes necessary for effective ITSM.

Respondents in the UK/USA surveys selected service quality, standardised process adoption and customer satisfaction as the top benefits. These are similar to those reported from the Australian survey: increased flexibility and adaptability of IT services; clarity of expectations of IT staff; cost justification of IT infrastructure and IT services; and improved quality of business operations.

Significance of Study
The findings on the challenges of measuring and reporting ITSM are unique as the other studies reviewed in this paper did not address this specific issue. Many focused on the challenges of ITIL implementation or adoption and the others reported the benefits and maturity of ITIL implementations. The Australian survey reported in this paper makes a unique contribution by providing a snap-shot of the actual ITSM benefits, metrics and challenges of measuring and reporting ITSM process implementations.

Limitations and Future Directions
The comparative analysis of the surveys conducted in Australia and UK/USA was limited as the goals and question items were similar but not identical. The scope of the analysis was restricted to the common elements.

Both surveys focused on benefits of ITSM adoption without collecting responses on possible negative outcomes. The researchers understand that this may present a one-sided view of the outcomes of ITSM adoption and that information on costs, challenges and other risks need to be incorporated into any cost-benefit analysis. Temporal and financial constraints limited the scope of this study and it is hoped that future studies could focus on this aspect.

A recognised limitation of this study relates to the sample frame. As stated earlier, analysis of the Australian responses revealed a small proportion of multiple respondents from the same large organisations. This may also have occurred in the UK/USA sample. This was however considered acceptable as the unit of analysis is the itSMF membership.

This paper reports on an important step to develop a performance measurement framework which will be a valuable tool for organisations. IT service managers will be able to work from their established goals, selecting and implementing metrics from the framework. Then they will better understand the performance of their IT service management processes and can initiate improvement actions to address gaps identified. The development of this framework is significant as it will assist managers to measure the performance of their IT service processes and enable consistent benchmarking. It is innovative as it has not been undertaken before at this level.

In the next stage of this study, the research question asks *Which specific metrics can be used to measure ITSM performance and how can these metrics be derived?* We will develop a performance measurement framework based on the ITIL processes. To populate the framework, the researchers will conduct case studies on organisations with mature ITIL processes. The objectives of each process will be examined to develop metrics and methods to derive the metrics. The BSC approach will be used to structure the process objectives and performance metrics. The ITSM BSC (presented in Figure 6) will be populated with goals and measures. The survey and case study data on benefits and metrics will be collated into a catalogue of commonly used metrics and benefits for implemented processes.

Consistent with the performance measurement framework, selection criteria used in regards metrics will be collated, analysed, and incorporated into the framework. When completed, the framework will be disseminated to IT service managers internationally to provide a much-needed guide to effective IT service management performance measurement.

Notes
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Author biographies

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Dr Aileen Cater-Steel is Associate Professor in Information Systems at the University of Southern Queensland. Over the last six years has led a research team investigating the adoption and benefits of IT service management frameworks. The team has achieved funding from the Australian Research Council for two ITSM projects to examine the return on investment from ITIL implementation and to develop a tool for software-mediated ITSM process assessment. Prior to her academic appointment, Aileen worked in private sector and government organisations where her career progressed from programmer, systems analyst and project manager to IT Manager.

Mark Toleman is Professor and Head of the School of Information Systems at the University of Southern Queensland. Professor Toleman has a MSc in mathematics from James Cook University and a PhD in computer science from the University of Queensland. He has published over 130 peer reviewed articles in areas ranging from information systems development methodologies to human-computer interaction to agricultural science. His research interests include IT service management, IT governance, systems development methodologies, and community information systems.

Appendix

Sample questions from the Australian Survey

9. SECTION C: ITIL® V2 BENEFITS MEASUREMENT

2. For each of the ITIL® V2 processes you are involved in please list the key benefit(s) realized from the implementation of the process (For example, Process: Problem Management, Benefit: increased customer service levels)

Process	Benefit
Incident Management	
Problem Management	
Configuration Management	
Change Management	
Release Management	
Service Desk Function	
Service Level Management	
IT Financial Management	
Capacity Management	
Availability Management	
IT Service Continuity Management	

3. For each of the ITIL® V2 processes you are involved in please list the metric(s) used to measure the key benefit(s) realized from the implementation of the process. (For example, Process: Problem Management, Benefit: increased customer service levels, Metric: Number of incidents resolved by known error).

Process	Metric
Incident Management	
Problem Management	
Configuration Management	
Change Management	
Release Management	
Service Desk Function	
Service Level Management	
IT Financial Management	
Capacity Management	
Availability Management	
IT Service Continuity Management	

5. Please select the key business and financial benefit(s) realized from the overall ITSM implementation

	Business	Financial
Benefit		

6. Please select the key employee and innovation benefit(s) realized from the overall ITSM implementation

	Employee	Innovation
Benefit		

7. Please select the key internal benefit realized from the overall ITSM implementation

	Internal
Benefit	