A model to select processes for IT service management improvement

Anup Shrestha, Aileen Cater-Steel, Wui-Gee Tan, Mark Toleman
School of Information Systems
University of Southern Queensland
Toowoomba QLD 4350
Email: anup.shrestha@usq.edu.au, aileen.cater-steel@usq.edu.au, wui-gee.tan@usq.edu.au, mark.toleman@usq.edu.au

Abstract

IT organisations are continually seeking improvements in managing IT service management processes. The selection of relevant processes to improve is one of the most crucial initial decisions to make in service improvement projects. In this paper, we focus on developing a process selection decision model using service perception factors from the Service Quality (SERV-QUAL) model and business drivers from the Balanced Scorecard perspectives along with the main objective of service improvement as improvement driver. We use a Design Science Research method to develop the model and then a prototype from our proposed model. We establish an evaluation protocol to determine the effectiveness of the prototype which will be demonstrated in a case organisation. The main contribution of the paper is to provide evidence-based decision support for IT service providers to select the most relevant service processes to improve.

Keywords

IT service management, process improvement selection, ITSM process assessment, ITIL, design science research

INTRODUCTION

Winning organisations manage business processes as strategic assets which is why they are successful (McCormack et al. 2009). IT service management (ITSM) represents a model to demonstrate exemplar customer-oriented processes of IT services. Continual improvements in IT services are a prime requirement in today's competitive business environment. True to the old management adage "you can't manage what you don't measure", processes are measured for improvements which ultimately facilitate service improvements (OGC 2007). Although it is apparent that an initial process assessment can support process improvements in IT services (Barafort et al. 2009), process assessment is often criticised for extensive use of resources and high costs (Fayad et al. 1997; Van Bon et al. 2007). Hence it is important to determine the scope of process assessment as suggested by the international standard for process assessment ISO/IEC 15504 (ISO/IEC 2004).

The importance of process improvement in ITSM is clearly evident from the fact that the *de facto* ITSM framework, the Information Technology Infrastructure Library (ITIL), has an entire volume dedicated to process-based continual service improvement (OGC 2007). Service process improvement is also a requirement of the service management system in the international standard for ITSM ISO/IEC 20000 (ISO/IEC 2011).

Organisations seldom have budget, time, resources or requirements to assess all processes for improvement at one time. Hence, selecting the right processes to improve is a crucial decision (Davenport et al. 1990). In an attempt to justify process selection, several guidelines have been proposed for Six Sigma (Zellner et al. 2010) or business process improvement projects in general (Huxley 2003; Meade et al. 2001; US-Navy 1996) but there is a lack of specific guidelines for ITSM processes. A common criticism is that the guidelines are not prescriptive enough for effective implementation in industry. Process selection guidelines need to provide specific steps to follow for selecting critical processes to improve.

To address this problem we propose a process selection decision model to provide evidence-based decision support in selecting IT service processes for improvement. Applying such an approach in the selection of critical IT service processes aims to: obtain key stakeholders' perceptions on the service requirements to improve IT service processes; shortlist and confirm the current business cycle drivers that have the greatest impact to business; and finally prioritise the ITSM processes for improvement in terms of the two perspectives: service perceptions and business and improvement drivers. By following this approach, it will be possible to provide evidence-based decision support to managers when deciding on service improvements based on the processes which have the highest impact on business and perceived by key stakeholders as most important to improve.

This paper focuses on a key activity of the first stage of a project that aims to develop a software-mediated process assessment tool to facilitate continual service improvement in ITSM. The project involves three industry

research partners to develop and evaluate the tool and has four stages: research the latest international standards of process assessment and ITSM, and determine scope of ITSM process assessment; develop a software tool for process assessment based on the international standard process models; implement and evaluate the tool in two case organisations; and determine the suitability of the tool for continual service improvement. In this first stage, we develop a model for selecting IT service processes to define the scope of ITSM process assessment.

The research methodology used to develop the process model is Design Science Research (Hevner et al. 2004) and the proposed approach has been operationalised in a prototype tool developed by a process assessment service provider company. To evaluate the prototype, it will be used in a real project within a case organisation. Design Science Research Methodology (DSRM) comprises six steps: Problem Identification and Motivation, Objectives of a solution, Design and Development, Demonstration, Evaluation, and Communication (Peffers et al. 2007). In the context of Information Systems, DSRM focuses on solving real-world problems through creation and evaluation of IT artefacts (Hevner et al. 2004). DSRM is appropriate in this research since it focuses on the central research artefact: ITSM process selection decision model and the research activities of developing, demonstrating and evaluating the research artefact aligns perfectly with the DSRM phases. Figure 1 shows how our research is structured around each DSRM phase.

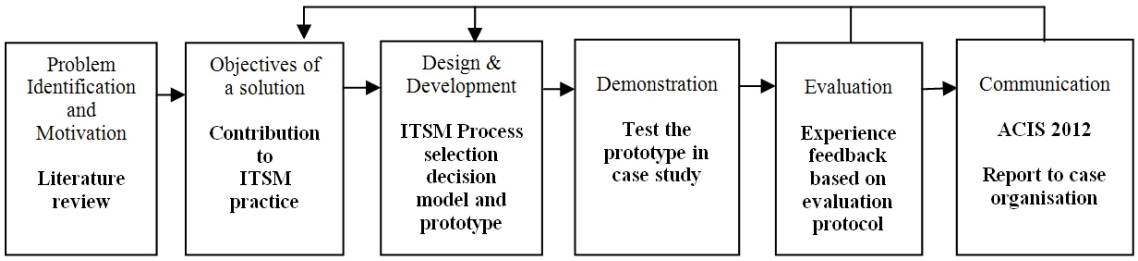

Figure 1: DSRM phases adapted from Peffers et al. (2007)

This paper is structured as follows. In the Literature Review section, to address the research problem we present the related work composed of the current guidelines available for process selection, the current business cycle drivers organised by the four perspectives of the Balanced Scorecard (Kaplan et al. 1992) and the service perception factors using the Service Quality model (Parasuraman et al. 1985). The research approach is presented next with three sub-sections on artefact development, demonstration and evaluation. Finally the conclusion section provides the limitations and implications of the research and an agenda for future work.

LITERATURE REVIEW

Two closely related economic theories, Agency Theory (Eisenhardt 1989) and Transaction Cost Theory (Williamson 1981) may be applied to provide theoretical support. Agency theory (Eisenhardt 1989) explains that the major issue in agency relationships is ensuring that the agent acts in the interests of the principal while transaction cost theory is centred on suggesting efficient structures of economic governance depending on transaction costs (Williamson 1981). In our context, the IT organisation represents the agent providing IT services to the business representing the principal. Bounded rationality of the principal prohibits a transparent assessment of what the agent is doing. Self-interest of the agent may create misalignment of their activities with business goals. In such circumstances, agency problems such as goal conflict and information asymmetry arise between the business and the IT service provider. In the context of ITSM where service delivery is organised around processes, service process assessments provide a medium to demystify “adverse selection” and “moral hazard” problems of the business by assessing the quality of processes. Our model emphasises the selection of the important ITSM processes which when improved will have greatest business impact and stakeholder support thus reducing agency problems. Furthermore, based on transaction cost theory our model is operationalised as a software prototype tool that can provide a more efficient approach in ITSM process improvements. ITSM process assessment and improvement represent a substantial transaction cost (Van Bon et al. 2007) and the prototype tool can reduce transaction costs by conducting this activity with minimal resource requirements since software reduces manual effort in organising activities of any process. In summary, the proposed model focuses on IT service improvement initiatives that address agency problems and reduce transaction costs.

In this section, we discuss the current guidelines on process selection methods. A priori understanding and anecdotal observations of process improvement initiatives suggest that the processes that are selected for improvement should have the highest impact on business and be perceived by stakeholders as most in need of improvement. Many guidelines have been proposed based on this notion but decisions regarding which processes to choose for improvement have generally been complex (Meade et al. 2001) with little structure in the decision making process. At most, organisations tend to develop a checklist of factors to consider while selecting processes or ideal attributes of processes for improvement (US-Navy 1996).

Firstly we discuss existing guidelines in the ITSM domain. Barafort et al. (2002) suggest conducting pre-assessments to simplify process selection and experiment with Porter and Miller's Value Chain diagram (1985) to identify the critical core processes that support business objectives. Hilbert et al. (2007) also provide an example of selecting processes aligned to the organisational strategic goals. Huxley (2003) developed a ten-step targeted methodology to determine processes that are most critical, have a positive cost/benefit and a strong possibility of being successfully improved. While these papers provide the linkage of business objectives to justify relevant process selection, they fail to incorporate the service perceptions of key stakeholders to understand what needs improvement from the stakeholders' perspective.

Looking beyond the ITSM discipline, there are several business process management guidelines for selecting processes for improvement. The US Department of the Navy provided a handbook for basic process improvement (US-Navy 1996) including a process selection worksheet that incorporates customer expectations and key attributes of processes which are ideal for inclusion. Some important considerations in selecting processes for improvement are also provided, such as using the Pareto principle to select processes that are linked to major problem areas and adopting a minimalistic approach by starting with simple "low-hanging fruit" processes that have the least organisational constraints (US-Navy 1996). Hammer et al. (2003) suggested three attributes that make processes ideal for selection: dysfunctional (most problematic), important (highest impact), and feasible (likely to succeed). Likewise, Davenport et al. (1990) suggested considering "redesign urgency" or "high-impact" to select important processes for redesign. Zellner et al. (2010) posit a four-step approach in selecting critical processes for Six-Sigma projects: identify customer types and initial candidates for critical processes; analyse consistency of evaluation factors for selection; cross-check processes with evaluation factors; and finally prioritise processes based on the Analytical Hierarchy Process technique (Saaty et al. 2007). A similar methodology has been proposed by Meade et al. (2001) with four steps: identify capabilities that support business vision; determine capability ratings; determine performance level of the processes; and finally select the critical processes. These researchers examined ideal process attributes for improvement or factors that associate processes with business goals which might be suitable for general business processes. However for the ITSM model with a strong customer-oriented focus, it is risky to ignore how service beneficiaries and process workers alike feel about the processes that affect quality of service delivery. Moreover, there is a lack of a formal process selection methodology that can be implemented to select processes in ITSM. The IT service industry is seeking a structured process selection method with evidence-based decision support to effectively choose the key processes that are both critical to business objectives and perceived as important by key stakeholders.

RESEARCH APPROACH

The main goal of the research is to develop a process selection decision model based on service perceptions and business drivers as key evidence and then construct a prototype, allowing the model to be focused on stakeholders' service perceptions, while at the same time ensuring that processes are prioritised based on the key business drivers that have the highest impact on the business. The design, development, evaluation protocol and demonstration of the model are discussed in the following sub-sections.

The Balanced Scorecard to Identify Business Drivers for Process Selection

We believe that the link between IT service processes and business objectives can be better explained with the concept of the Balanced Scorecard (BSC) developed by Kaplan et al. (1992). While other frameworks such as value chain analysis, cost/benefit analysis, critical success factors and risk assessments can also determine important processes that have the most crucial business impact, the choice of the BSC presents a more "balanced" analysis of organisations on a strategic level from four key perspectives: financial; customer; internal business process; and innovation and learning (Kaplan et al. 1992). Furthermore, the concept of BSC is well accepted in business as a core management tool (Rigby 2011).

Although the BSC is an overall strategic performance management tool, using this tool comprises breaking down business goals into objectives and specific performance measures at different levels of detail throughout the organisation. The evaluation of important performance measures, also known as "key performance indicators" in various versions of the BSC, answers the question "what is important to the business?" Such performance indicators that drive business forward are valuable intellectual capital of any organisation (Marr et al. 2004). "Key performance indicators" and "business drivers" are often used interchangeably but we refer to the latter in our research to reinforce their impact on the performance of the business rather than the indication of performance measurement.

Since the BSC is an improved method of measuring business goals which is used to effectively drive the business forward and has demonstrated value in various types of organisations including IT organisations (OGC 2007), we use this framework to derive the business drivers tailored to IT service organisations. The business

drivers derived from the BSC provide a good equilibrium of performance measures for IT service processes that align with business objectives.

The Service Quality Model to Determine Service Perception Factors for Process Selection

Even though the customer perspective of the BSC produces business drivers to align IT service processes to business goals the approach ignores the perception of the key stakeholders towards IT service delivery. To determine service improvement, it is important to understand customer perceptions about the current service delivery. Likewise, the views of service provider management and staff in regards to whether a process can be successfully improved or not, and if the process improvement is within the skills and resources of the organisation, are important to determine the feasibility of a process's inclusion for improvement. In order to query key stakeholders in regards to their perception of quality service, we propose a service perception survey as an effective method. We refer to the Service Quality (SERV-QUAL) model proposed by Parasuraman et al. (1985) to organise our understanding of service perception factors.

The SERV-QUAL model originated from the marketing discipline and was proposed to measure service quality. In the context of Information Systems (IS) however, the use of IS adapted SERV-QUAL has attracted a deal of criticism (Jiang et al. 2002). The objective of using the SERV-QUAL model in our research is not for measuring service quality but for gap analysis to determine service perception factors that shape stakeholders' understanding of their role in the organisation. The service gap model by Van Bon et al. (2007) is an adaptation of the SERV-QUAL model for ITSM and can be used to determine the nature of the gap between customer service perception and actual service delivery as well as among IT service process workers and management. The SERV-QUAL model provides an understanding of the service gap to determine service perception factors. This will assist all key stakeholders to have a consistent and coherent view of their role and understanding of their organisation and ultimately shape service perceptions that contribute to process selection.

Design

Based on the BSC perspectives and the SERV-QUAL model, we designed our model as shown in Figure 2 to prioritise ITSM processes for improvement based on the current business goals of the organisation and service perception of key stakeholders. Inputs are the current ITSM processes in the organisation, service perception factors and current business cycle drivers. These three inputs are analysed to produce the final output: a list of prioritised ITSM processes for IT service improvement.

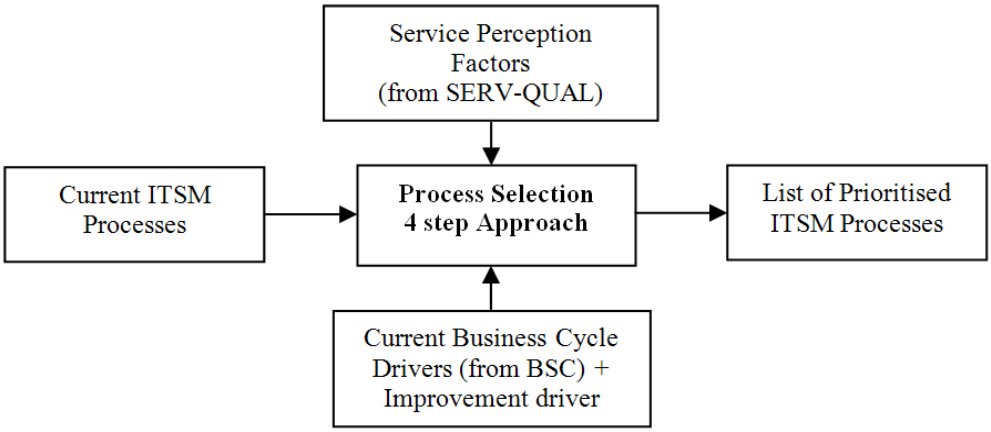

Figure 2: ITSM Process Selection Decision Model

Development

Our proposed process selection decision model includes four steps to prioritise the ITSM processes for service improvement: (i) service perception understanding, (ii) service perception confirmation, (iii) selection of business and improvement drivers, and (iv) selection of ITSM processes for improvement. We call this the 4S model of ITSM process selection for improvement. Quantitative and qualitative methods are used to collect and analyse the inputs to the model and produce the intended output. The current ITSM processes in the IT organisation is the unit of analysis. Step (i) and (ii) provide service perception input while step (iii) comprises business and improvement driver input. Step (iv) then facilitates the output of the model. The 4S model of ITSM process selection for improvement is illustrated in Figure 3.

We now discuss each step in detail.

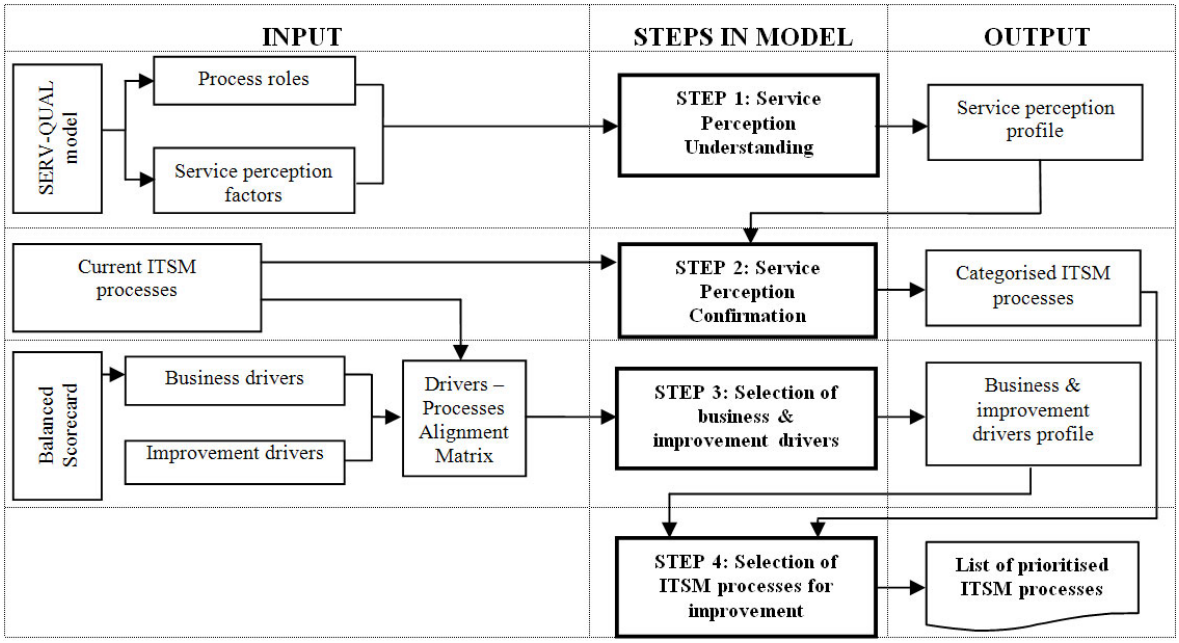

Figure 3: 4S model of ITSM Process Selection for Improvement

(i) Service Perception Understanding

To begin, it is necessary to facilitate the key stakeholders of the IT services to understand their role in the IT organisation. A service perception survey can be developed and conducted across the stakeholders to determine what they perceive in regards to their understanding of IT service provision. Based on the SERV-QUAL model for gap analysis (Van Bon et al. 2007), we firstly identified three distinct stakeholders related to IT service provision. We call them "process roles". The same three groups of stakeholders are identified in Tudor's ITSM Process Assessment (TIPA) that provides a methodology for ISO/IEC 15504 process assessment of ITIL (Barafort et al. 2009): Service beneficiary (customers); Service provider management (process managers); and Service provider workforce (process workers).

After considering the sixteen possible service gaps provided by Van Bon et al. (2007) in the service gap model, three prominent gaps stand out: expectation – perception gap; past experience – requirements gap; and gap from external and internal communication. To address the three important service gaps, we identified the three most common general factors in the ITSM model that underpin the service perception of stakeholders: value proposition; degree of confidence; and communication.

We now briefly explain the development of nine specific service perception factors from the identified service gaps. *Value proposition* is associated with providing more *benefits* and eliminating *costs* (Barnes et al. 2009) and we believe that a strong *partnership* is important for retaining the value proposition. These three views develop the specific factors of service perception from the value proposition. Likewise, *degree of confidence* is used to determine the level of confidence the *customers* have in the IT Service Provider as well as how the IT service provider as a *supplier* and its *staff* perceive the level of confidence the customers have in its services. The three groups of stakeholders in the ITSM supply chain provide comprehensive views to derive the specific factors of degree of confidence in service perception. Finally, to address the communication gap in understanding service perception, we believe that it is necessary to have adequate *channels* of communication, better business *understanding* and sound *knowledge* of ITSM processes for service delivery. We use these three views to shape the specific factors of service perception from a communication standpoint. The development of a total of nine specific factors of service perceptions from the service gaps is listed in Table 1. The resultant service perception survey is generated with questions for each of the identified service perception factors.

After conducting the service perception survey, the responses produce a consolidated service perception profile. The service perception profile provides an understanding of current service provision as perceived by key stakeholders and allows contrasts between the different stakeholders' views to highlight misalignment between the provider (management and staff) and receiver of services. No consideration of ITSM processes are made in this step since it relates only to high-level service perceptions. The reason behind conducting this survey is to discuss the service perception profile with the stakeholders to help shape their overall understanding of service provision. This step will help the stakeholders to facilitate their workshop responses in step (ii).

Table 1: Service gaps, general factors, views and specific factors of service perception

Service gaps	General factors	Views	Specific factors
Expectation – Perception gap	Value proposition	Benefits	Meeting expectations
		Cost	Budget spend effectiveness
		Partnership	Importance as a partner
Past Experience – Requirements gap	Degree of confidence	Customer	Customer focus
		Staff	Staff morale
		Supplier	Supplier confidence
Gap from External & Internal Communication	Communication	Channel	Communication channels
		Understandin	Business understanding
		Knowledge	Process awareness

(ii) Service Perception Confirmation

After producing the service perception profile, consistency of responses from different process roles is analysed to confirm service perception profile. A workshop can be organised with the key stakeholders to (a) confirm the service perception profile from step (i); and (b) categorise the ITSM processes based on their perceived importance to the business.

In this step, the service perception profile is reviewed with the workshop attendees to obtain a full consensus. Since the workshop attendees comprising service provider management (process managers) would have understood the service perception profile in step (i), this gives them an opportunity to revisit their understanding and compare and contrast with other stakeholder groups i.e. service beneficiary (customers) and service provider workforce (process workers). This review is an important step for service provider management to obtain an overall understanding of the service perception not only from their perspective but with insights from the customers and staff about the IT services they manage. Such triangulation facilitates validation of data through cross-checking from three stakeholder group sources which promotes reliability and validity to determine regularities in service perceptions (O'Donoghue et al. 2003).

Finally, all workshop attendees are asked to allocate each of the current ITSM processes into one of five pre-defined categories in terms of their relative importance and a final consensus is reached on the categories. The five categories of importance and their subsequent weights are critical (5), high (4), moderate (3), low (2), and not important (1).

(iii) Selection of Business & Improvement Drivers

Using the ITSM concept that processes support the provision of services and these services support the business objectives and goals, we researched typical drivers across a variety of market sectors, specifically public sector, business services, finance, and transport using different variants of the BSC to generate a list of relevant business drivers for IT services. The business drivers are associated with IT service processes to assess the impact of the processes on the business goals – thus providing a measure to determine which processes are more important. We propose that the Customer perspective of the BSC can be split into Internal and External Customers to recognise that IT service providers often deliver internal- and external-facing services. This provides greater granularity in identifying the typical business drivers. A list of 25 business drivers was identified from the five perspectives of the BSC as illustrated in Figure 4.

Recognising that most service improvement initiatives are also driven by the strategic goals of the service provider we also identified eight common “reasons” to assess and improve processes and termed them as “improvement drivers”. The eight improvement drivers identified are: greater adaptability (increased IT change throughput); competitive advantage for the IT service provider; stakeholder satisfaction with IT service provision; external factors (such as auditors/legislation); improved customer focus within the IT service provider; improved quality of IT service provision; political initiative; and cost reduction.

After defining the common business drivers and improvement drivers that underpin service management improvements we constructed a matrix that relates each of the drivers to the current ITSM processes in order to rank the processes that offer the greatest value in supporting each driver. This was done by cross referencing each process purpose and goals (derived from the ITIL framework and ITSM international standard ISO/IEC 20000) with each driver. A three-point rating scale was used with the score of 1 for low, 2 for medium and 3 for

high importance of the process in contributing to the business driver. In order to finalise the list of business and improvement drivers, construct and validate the matrix; a Delphi technique in three rounds was applied. Input was received from five expert ITSM consultants with ITIL Expert level qualifications and a collective experience of 60 years within ITSM. A Delphi study is relevant in this context since it is a more democratic, inclusive and scientific method for development and evaluation of conceptual models (Moody 2005).

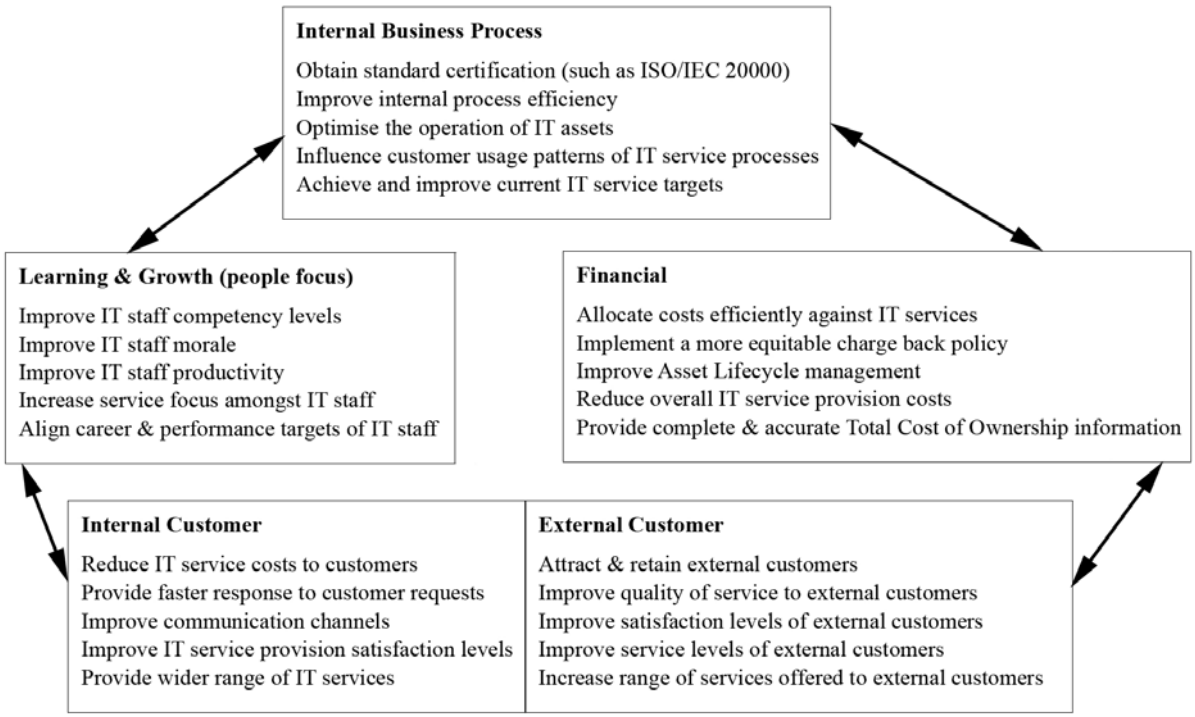

Figure 4: BSC perspectives of 25 business drivers

A driver ranking survey can be conducted to shortlist the key business and improvement drivers from the list. This survey comprises two exercises: a voting technique to shortlist ten important business drivers from the initial list of 25 business drivers; and a pairwise comparison technique widely applied in the Analytic Hierarchy Process (see Saaty et al. 2007) to rank the ten business drivers and produce the top four. The rationale behind using the pairwise comparison as opposed to a complete voting is to apply adequate rigour in finalising the four business drivers by comparing each of the shortlisted ten business drivers in pairs. Such a structured technique can handle complex group decision making and is widely used in the scientific study of preferences (Saaty et al. 2007).

The reason for a driver ranking survey rather than ranking ITSM processes directly is that most managers struggle to comprehend their business in terms of processes (Davenport et al. 1990) while business drivers derived from the BSC can provide a better alignment of process improvement initiatives with the business goals.

(iv) Selection of ITSM processes for improvement

For each of the current ITSM processes, a weighting and summing activity yields the overall process score. The weights of the five shortlisted business and improvement drivers are summed to calculate the process score. The maximum score possible for each process is 15 (i.e. score of 3 for all 5 drivers) and the minimum is 5 (i.e. 1 for each driver). Using this score and the score derived from the category of the process (1 to 5) from step (ii), a final process rank is calculated for each process and then the prioritised list of ITSM processes is produced. This list of prioritised ITSM processes is ranked from the input of both business drivers (provided by driver ranking) and service perceptions (provided by process category). Hence, the ranking of the processes in terms of their importance for improvement is justified from the key stakeholders' service perceptions of improvement and the process's impact on the business goals.

Finally, presentation of this prioritised ITSM process list provides an indication to the service improvement managers of which processes they should consider selecting for improvement. Making selection decisions from this list enables evidence-based decision support justifying the selected processes as critical to business and in need of improvement.

A software prototype tool has been developed to operationalise the proposed process selection decision model in partnership with our industry partner. The software facilitates online surveys for service perception (step i); organises workshops with a tool to categorise processes (step ii); conducts online surveys for voting and pairwise comparison of business and improvement drivers (step iii); and calculates process scores to obtain the final prioritised ITSM process list for ITIL processes (step iv).

Evaluation Protocol

The artefact, that is the ITSM process selection decision model which is operationalised in a prototype software tool will be demonstrated and evaluated in a pilot organisation. The researcher-practitioner knowledge gap is a major concern in the evaluation of the quality of a conceptual model (Moody 2005) and two-way knowledge transfers between research and practice are necessary for successful technology transfer (Kaindl et al. 2002). Our evaluation protocol will therefore observe how effectively the model works in practice.

In order to conduct a thorough evaluation, we organise our work based on the framework of Pries-Heje et al. (2008). Our evaluation has an *ex post* orientation as we evaluate our artefact after development to obtain tangible results and lies in a naturalistic setting because the artefact is developed to solve real world problems. We have developed the evaluation protocol with evaluation measures and acceptance criteria as illustrated in Table 2.

Table 2: ITSM process selection decision model evaluation protocol

Evaluation Measure	Acceptance Criteria
Service perception survey	At least 3 respondents from service provider management (process managers) and service beneficiary (customers) process roles. At least 6 respondents from service provider workforce (process workers) process role.
Perception workshop	Attendance of at least 90% of service provider managers. Full consensus.
Driver ranking survey	Participation of all workshop attendants.
Experience feedback	Feedback from workshop participants on the final prioritised ITSM process list and on the effectiveness of the model obtained from a post-implementation interview with relevant service provider managers.

Demonstration

To demonstrate the model, agreement has been achieved with one of our industry research partners. The demonstration of the model with the prototype tool is scheduled. After the prioritised ITSM process list is generated post-demonstration, the evaluation protocol will be enacted to determine the model's effectiveness.

CONCLUSION

Current guidelines available to provide support on choosing IT service improvement processes lack a structured approach. To address this problem a process selection decision model was designed and developed with the final goal of creating an acceptable framework to select processes for improvement. We chose service perceptions perspective because it gives responses from the key stakeholders about which ITSM processes need improvement. We chose current business cycle drivers since they enable analysis of the relative importance and impact of ITSM processes on the business goals.

This research contributes to the existing literature by applying Agency Theory and Transaction Cost Theory in the context of the ITSM agency relationship between business and IT organisation. The model provides a transparent contract in suggesting to the business how service improvements are being carried out by the IT organisation thus reducing information asymmetry. The use of a software prototype to operationalise the model reduces transaction costs of this activity. Hence the two theories provide foundation in this research to justify development of the approach and ultimately the significance of the model and its prototype. Likewise by providing a structured approach to selecting processes for improvement, this paper addresses the literature gap in the continual service improvement aspect of ITSM since the widely popular ITIL framework and the international standard ISO/IEC 20000 of ITSM fail to provide guidelines or requirements to achieve this.

A collaborative effort between academic researchers and industry practitioners has facilitated the development of the model. The model was developed as the research artefact with a strong theoretical foundation and is generic enough for implementation in IT organisations implementing ITSM processes. For a smooth execution of the model, a software prototype has been developed and we are in the process of evaluating the model in a case organisation. The evaluation of the model is necessary and very important not only to validate the research,

but also to identify characteristics that can lead to improved decisions regarding selection of processes for improvement in ITSM.

Even though the proposed process selection decision model provides a structured set of activities to obtain the list of processes to improve, the ultimate decision to select processes is made by the service improvement managers and the IT managers. Organisations can use the proposed model as an evidence-based tool to support decisions on selecting important ITSM processes to improve. The end result of this process selection decision model provides clear insight on which processes the key stakeholders consider are critical to business objectives.

This paper has achieved its purpose: to develop a process model for IT organisations to select ITSM processes for improvement. This model is expected to assist in process assessment initiatives and service improvement projects by providing relevant information to managers in their process selection stage. This model can also be used to justify the process selection choices and to show top management that a structured method is followed in selecting relevant processes for improvement. Process improvement projects in general can be disruptive in organisations and hence it is important to get management buy-in.

Despite the good prospects of the model, it is necessary to conduct evaluation and consider the results of the evaluation for further refinement of the model. To address construct validity, the service perception survey should be able to collect information from the different stakeholder groups. Despite the application of academic rigour and industry experience input, there are no claims that can be made on how well this model will perform since it has not yet been used. This study aims to evaluate the model in one case organisation. In order to get a richer view of integration of the model, the aim for future research is to apply the artefact in other organisations in order to confirm the applicability and effectiveness of the model. The feedback cycle from several iterations of evaluation should lead to a robust model capable of defining a structure to guide decisions regarding selection of ITSM processes for improvement.

REFERENCES

Barafort, B., Betry, V., Cortina, S., Picard, M., St-Jean, M., Renault, A., and Valdès, O. 2009. *ITSM Process Assessment Supporting ITIL*. Zaltbommel, Netherlands: Van Haren Publishing.

Barafort, B., Di Renzo, B., and Merlan, O. 2002. "Benefits Resulting from the Combined Use of ISO/IEC 15504 with the Information Technology Infrastructure Library (ITIL)," *4th International Conference on Product Focused Software Process Improvement*, Heidelberg, Germany: Springer Berlin, pp. 314-325.

Barnes, C., Blake, H., and Pinder, D. 2009. *Creating & Delivering Your Value Proposition: Managing Customer Experience for Profit*. London, UK: Kogan Page Limited.

Davenport, T. H., and Short, J. E. 1990. "The New Industrial Engineering: Information Technology and Business Process Redesign," *Sloan Management Review* (31:4), pp 11-27.

Eisenhardt, K. M. 1989. "Agency Theory: An Assessment and Review," *The Academy of Management Review* (14:1), pp 57-74.

Fayad, M. E., and Laitnen, M. 1997. "Process Assessment Considered Wasteful," *Communications of the ACM* (40:11), pp 125-128.

Hammer, M., and Champy, J. 2003. *Reengineering the Corporation: A Manifesto for Business Revolution*. NY, USA: HarperCollins.

Hevner, A. R., March, S. T., Park, J., and Ram, S. 2004. "Design Science in Information Systems Research," *MIS Quarterly* (28:1), pp 75-105.

Hilbert, R., and Renault, A. 2007. "Assessing IT Service Management Processes with AIDA–Experience Feedback," *14th European Conference for Software Process Improvement*, Potsdam, Germany.

Huxley, C. M. 2003. "An Improved Method to Identify Critical Processes," in: *Faculty of Information Technology*. Brisbane, Australia: Queensland University of Technology.

ISO/IEC. 2004. "ISO/IEC 15504-2:2004 – Information Technology – Process Assessment – Part 2: Performing an Assessment," Switzerland: International Organisation for Standardisation.

ISO/IEC. 2011. "ISO/IEC 20000-1:2011 – Information Technology – Service Management – Part 1: Service Management System Requirements,". Switzerland: International Organisation for Standardisation.

Jiang, J. J., Klein, G., and Carr, C. L. 2002. "Measuring Information System Service Quality: SERVQUAL from the Other Side," *MIS Quarterly* (26:2), pp 145-166.

Kaindl, H., Brinkkemper, S., Bubenko Jr, J. A., Farbey, B., Greenspan, S. J., Heitmeyer, C. L., Leite, J. C. S. P., Mead, N. R., Mylopoulos, J.,and Siddiqi, J. 2002."Requirements Engineering and Technology Transfer: Obstacles, Incentives and Improvement Agenda,"*Requirements Engineering* (7:3), pp 113-123.

Kaplan, R. S., and Norton, D. P. 1992. "The Balanced Scorecard–Measures that Drive Performance," *Harvard Business Review* (70:1), pp 71-79.

Marr, B., Schiuma, G., and Neely, A. 2004. "Intellectual Capital–Defining Key Performance Indicators for Organizational Knowledge Assets," *Business Process Management Journal* (10:5), pp 551-569.

McCormack, K., Willems, J., Van den Bergh, J., Deschoolmeester, D., Willaert, P., Štemberger, M. I., Škrinjar, R., Trkman, P., Ladeira, M. B., and de Oliveira, M. P. V. 2009. "A Global Investigation of Key Turning Points in Business Process Maturity," *Business Process Management Journal* (15:5), pp 792-815.

Meade, L. M., and Rogers, K. J. 2001. "Selecting Critical Business Processes: A Case Study," *Engineering Management Journal* (13:4), pp 41-46.

Moody, D. L. 2005. "Theoretical and Practical Issues in Evaluating the Quality of Conceptual Models: Current State and Future Directions," *Data & Knowledge Engineering* (55:3), pp 243-276.

O'Donoghue, T. A., and Punch, K. 2003. *Qualitative Educational Research in Action: Doing and Reflecting* London, UK: RoutledgeFalmer.

OGC. 2007. *IT Infrastructure Library - Continual Service Improvement*. London, UK: The Stationery Office.

Parasuraman, A., Zeithaml, V. A., and Berry, L. L. 1985. "A Conceptual Model of Service Quality and its Implications for Future Research," *Journal of Marketing* (49:4), pp 41-50.

Peffers, K., Tuunanen, T., Rothenberger, M. A., and Chatterjee, S. 2007."A Design Science Research Methodology for Information Systems Research," *Journal of Management Information Systems* (24:3), pp 45-77.

Porter, M. E., and Millar, V. E. 1985. "How Information Gives You Competitive Advantage," *Harvard Business Review* (63:4), pp 149-160.

Pries-Heje, J., Baskerville, R., and Venable, J. R. 2008. "Strategies for Design Science Research Evaluation," *16th European Conference on Information Systems*, Galway, Ireland.

Rigby, D. K. 2011. "Management Tools 2011: An Executive's Guide," MA, USA: Bain & Company, Inc.

Saaty, T. L., and Peniwati, K. 2007. *Group Decision Making: Drawing out and Reconciling Differences*. PA, USA: RWS Publications.

US-Navy. 1996. "Handbook for Basic Process Improvement," USA: The US Department of the Navy.

Van Bon, J., de Jong, A., Kolthof, A., Pieper, M., Rozemeijer, E., Tjassing, R., van der Veen, A., and Verheijen, T. 2007. *IT Service Management - An Introduction*. Zaltbommel, Netherlands: Van Haren Publishing.

Williamson, O. E. 1981. "The Economics of Organization: The Transaction Cost Approach," *American Journal of Sociology* (87:3), pp 548-577.

Zellner, G., Leist, S., and Johannsen, F. 2010. "Selecting Critical Processes for a Six Sigma Project - Experiences from an Automotive Bank," *18th European Conference on Information Systems*, Pretoria, South Africa.

ACKNOWLEDGEMENTS

This work is supported by an Australian Research Council Linkage Project. We thank Mr. Paul Collins, Chief Technology Officer of Assessment Portal Pty Ltd. for his involvement, support and insights in the development of our process model and in providing the platform to implement a prototype tool for the model.

COPYRIGHT