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William Y C Wang

David Pauleen

Michael S C Ho

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William YC Wang, David J Pauleen, and Michael S C Ho

IT GOVERNANCE FOR SYSTEMS SUPPORT AND MAINTENANCE: VIEWS
FROM CIOs IN MULTINATIONAL ENTERPRISES

William Y C Wang, AUT University, william.wang@aut.ac.nz
David J Pauleen, Massey University, d.pauleen@massey.ac.nz
Michael S C Ho, Yuanpei University of Science and Technology,
scho@mail.ypu.edu.tw

ABSTRACT

This paper explores IS governance as it relates to systems support and maintenance (SS&M). We argue, that can be critically supportive of business operations, decision making, innovation and knowledge management strategies. Based on interviews with high level IS practitioners from large IT companies, we find that the value of SS&M as a potential link between the IT side and the business side of the organization, while recognized is still under-utilized. We enumerate and discuss a number of reasons for this situation from an IT governance perspective and call for a comprehensive research agenda to develop an integrated approach to link SS&M more closely.

Keywords: *IT Governance, Systems Support and Maintenance, Enterprise Systems*

Introduction

Existing Information Systems (IS) research has usually focused on adoption processes such as the incentives for adoption, selection of solutions, and analysis and design. A direction in Information Systems that needs further attention is the continuing governance of Systems Support and Maintenance (SS&M) and its relationship to company operations. Whereas industry practitioners and academic researchers fully realize the importance of investment and adoption in the latest technologies for quality and productivity improvements, SS&M issues associated with these enterprise systems tend to receive insufficient management attention (Olson 2004; Stephens 2004). In the United States upward of 20% of gross fixed capital formation is invested in ICT (hardware, software and communication networks) (OECD 2007). Given that these assets require SS&M, a significant portion of the total cost, this lack of interest in the issue is surprising (Mookerjee 2005) and most studies of IT governance focus on acquisition rather than post adoption activities.

'Governance' refers to the distribution of decision making rights and obligations and the procedures and mechanisms for making strategic decisions and monitoring their outcome in an organizational context (Peterson 2004). IT Governance configurations are designed to allocate accountability, facilitate interaction and create alignment to the corporate resources related to IT. In systems support and maintenance,

IT governance provides the necessary oversight and cohesion that can encourage and facilitate the opportunities for accumulating organizational knowledge and fostering innovation.

SS&M refers to all activities related to an IS system after implementation. From a limited perspective this might only involve the reconfiguration of software that is not working properly, maintaining and updating hardware, or service to the end users. Such a perspective is indeed a common perception. In fact, however, SS&M also includes activities that support business operations and decision making thus critically supporting corporate strategy. Studies point out that over 80% of SS&M efforts are associated with non-corrective actions (Pigosky 1996) including responding to user, business and environmental demands for new and necessary features — a potentially endless job.

IS is now firmly integrated into the organizational environment and involves people, hardware, software, data, and business processes and by extension related management challenges and the managerial behavior at individual, group, and organizational levels (e.g., O'Brien 2001; Galliers et al. 2006). Silver et al. (1995) go further, arguing that information systems is now a fundamental part of organizational structure, culture, and corporate strategy.

SS&M also encompasses other critical areas for the business, such as IS disaster recovery, information security and auditing, and post-adoption IT staff retention (e.g., Parikh 1986; Pigoski 1996; Hsu 2003; Drew 2005). While some organizations pay attention to these critical areas, others take a very ad hoc approach.

It is clear that high quality SS&M not only directly affects a company's return on its investment, but potentially has a critical influence on a business's ability to survive and prosper. SS&M becomes even more critical during times of economic downturn when money is in short supply for new system implementations and businesses have to make the best of what they have. SS&M is a critical factor in maintaining complex business operations on a limited budget (Banker et al. 1993). Even off-shoring various business functions, such as manufacturing, has an impact on SS&M activities by possibly involving IT Governance including the relocation of existing IT staff, the outsourcing of SS&M activities, and/or the recruitment and training of new SS&M teams (Wang and Ho 2006). And yet, the allocation of organizational resources to

William YC Wang, David J Pauleen, and Michael S C Ho

developing new systems and maintaining the post-adopted systems have rarely been jointly studied (Swanson and Beath 1990).

This paper reports our study exploring on what we see as the IT Governance issues concerning SS&M, particularly in the multinational enterprise context. We hope the research data inspires future research. The next section presents some background into research in IT Governance and in SS&M and essentially argues the case that their interrelationship needs more attention and study. The methodology section discusses the interview format and the participants interviewed in this study. This is followed by the findings, discussion and lastly the conclusions and implications where we call for a more integrated approach linking SS&M more closely to academic research and organizational management at a governance level.

IT Governance and Systems Support and Maintenance
Mindset of SS&M

SS&M at the post-adoption stage is not attractive — IT people prefer to be involved with the development of new systems rather than the maintenance of older systems. The outcome of former efforts may be easier to get recognized while the latter tends to be considered to be essential work. Back in 1981, Glass and Noiseux (cited in Edwards 1984, p. 254) came up with six major reasons why IT people are not attracted to SS&M at the post-adoption stage and they bear repeating here as they still seem to be relevant:

SS&M is intellectually very difficult;

SS&M is technically very difficult;

SS&M is unfair: necessary information is not available and the original developers are usually long gone;

SS&M is no-win: people only want problems solved after major contributions have been recognized in the system adoption process;

SS&M work does not result in glory, noticeable progress or chances for 'success'; and

SS&M lives in the past: the quality of yesterday's development work is often poor.

A number of critical reasons for the lack of attention to IT governance in SS&M in the organization may come under the rubric "design trade-offs" (El Sawry and Nanus 2001). In looking at robustness analysis of systems design, El Sawry and Nanus list nine considerations that focus specifically on design choices that compare immediate and long-term considerations. Most of these considerations involve SS&M issues: two are illustrative. One trade-off is short-term versus long-term. The authors argue "there needs to be more focus on a better balance between front-end design costs and the continuing adaptation and SS&M of the information system". They continue: "the best measure of implementation success must include the long-term cost/benefit calculation of all costs and benefits over the expected life of the system" (p. 39). SS&M has been identified as the most expensive aspect of the IS lifecycle (Parikh and Zvegintzoz 1983 in Dekleva 1992). However, the IT governance structure and original cost-benefit analysis of a new project generally does not

include the significant cost of post adoption SS&M which is often under-reported so as not to lessen the chances of the project's acceptance. In particular, given that most systems adopted in modern organizations are getting more complex and more numerous, SS&M costs have likewise been increasing (Banker et al. 1993). Mookerjee (2005) states that SS&M costs for a system increase with the number of associated systems since the turning to any of the interacting parts may result in changes to the system. In reality, once the development proposal is accepted it is difficult to find the money to hire the staff needed to support the system (Edwards 1984).

Another trade-off is incorporating future discontinuities versus present extrapolations. In a nutshell this involves taking an anticipatory stance towards design requirements. Rather than considering future possibilities in terms of present concepts, systems design must consider the current environment in terms of future possibilities. This trade-off is of particular interest since it implies sophisticated knowledge and skills in anticipating and forecasting change in business, user and environmental requirements — knowledge and skills that come through experience and SS&M staff training. Furthermore, a lack of interest in SS&M issues may be because there is often confusion between what is part of the development process and what is considered to be SS&M. For example, a common belief is that SS&M is not separate from the system development cycle; however, research shows that a number of unique activities and practices such as incorporating vendor patches, fixing user problems, solving conflicts with software updates, and monitoring response times, thresholds, and error logs only exist in the software maintenance process (Dekleva 1992; Pigoski 1996; Bennett 2000; Olson 2004). Yet these activities do not cover the costs associated with change of business processes which is a part of IS.

IT Governance

Studies in IT governance began in the early 1990s (Loh and Venkatraman 1992) and have focused on governance structures such as the distribution of IT authority (e.g., Sambamurthy and Zmud 1999) or the work of steering committees (e.g., Karimi et al. 2000), but also on governance processes such as IT strategy development (e.g. Van Grembergen et al. 2004) or decision making practices (e.g., Sabherwal and King 1995).

Wilkin and Chenhall (2010) state that the increasingly strategic and functional role of IT and related issues of decision rights and tactics has led to a shift from what has been known as IT governance to what is now understood as enterprise governance of IT. This understanding sees IT governance as "an integral part of corporate governance" (Van Grembergen and De Haes 2009, p. 3). As with corporate governance, IT governance defines and implements "processes, structures, and relational mechanisms in the organization" (ibid.) in ways that align IT to support business and the creation of business value from IT enabled business investments (Van Grembergen and De Haes 2009). The effective application of IT can significantly enhance the likelihood that an organization's strategic goals will be achieved. For example, Weill and Ross (2004) claim an increase in profits of 20% for those firms with effective IT

William YC Wang, David J Pauleen, and Michael S C Ho

governance.

The literature does not seem to identify a single best practice for IT governance. However, one thing is clear – successful modern enterprises have well crafted IT governance structures and support from IT staff and the enterprise systems. In these enterprises, executives can effectively respond to the business environment with the use of decision support systems and business intelligence and the general staff are able to do their jobs effectively according to planned processes. The top performing enterprises do not achieve good IT governance accidentally and many organizations still suffer from inadequate support with problematic legacy systems, long queues for IT desktop support, frequent IT system downtime, unfriendly user environments, etc. More seriously, users may lose hope as there is sometimes no likelihood of improvement. Signs of unhealthy IT governance include, but are not limited to, lack of incentive to improve current systems, poor IT staff retention, inadequate resources, and the ignorance of these problems among top management.

SS&M is surely within the scope of the understanding of IT governance given above (Tiwana. 2009, Van Grembergen and De Haes 2009). The most well known framework containing this component is Control Objectives for Information and related Technology (COBIT 2007) 4.1 (developed by the Institute of IT Governance, synthesized in Figure 1) which has four major areas of IT governance – plan and organize, acquire and maintain, deliver and support, and monitor and evaluate – and they are supported by goals and metrics (performance evaluation). This framework provides some guidelines in the sections of AI2 (Acquire and Maintain Application Software), AI3 (Acquire and Maintain Technology Infrastructure), DS13 (Delivery and Support Management Operations) and the associated control objectives.

Figure 1. Synthesis of COBIT Framework 4.1 (2007)
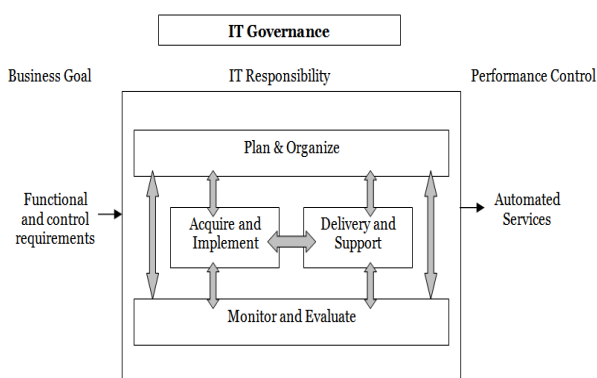
Nevertheless, the great majority of the publications and applications related to this framework have been practitioner-oriented, with very few research articles identified (Ridley et al. 2004) until recently. Moreover, COBIT suggests standard guidelines rather than adding much content to suit various business situations. Current IT governance frameworks have put business change in the planning and implementation phases and addressed SS&M as a support function. Given the dynamic business environment,

in fact, a SS&M team not only conducts routine work but also faces the nature of business changes that could have an impact on SS&M activities. A MIS Quarterly research note (Mithas et al. 2011) indicates that firm performance is associated strongly with information management capability via three intermediate constructs including customer management, process management, and performance management. SS&M would potentially ensure the alignment of the information management capability to the other constructs and thus the performance outcome. By surveying the literature, in short, there is still a lack of research into how IT governance can facilitate SS&M, particularly in a context of multinational and interorganizational contexts (for IOS governance, the related work can be seen in Croteau and Bergeron 2009).

SS&M was reported as under-researched 25 years ago (Edwards 1984). Since then it has not been developed as a major theoretical focus in the research agenda of IS but related issues have touched various sub-fields such as IT governance, IS outsourcing, security and auditing, etc. We believe the need for an integrated view of IT governance toward SS&M remains unmet. According to Edwards, the development lifecycle of an IS system consists of four stages that should be familiar to most people working in IS. These are systems overview, systems design, systems creation and systems implementations. The last step after the fourth stage is the post-implementation audit, which normally occurs within months of implementation and which generally consists of a checklist making sure that the system has met specifications and is functioning. What is absent from the system lifecycle is what happens after the system is implemented, i.e. the managerial issues for SS&M, for continued functioning and adaptation of the systems. While Dekleva (1992) found that modern system development methodology can reduce time spent on emergency error correction, lower the number of system failures, and facilitate changes in functionality as systems age, it does not seem to decrease the overall time needed for SS&M. Based on Edwards' influential paper, subsequent publications and textbooks on the Systems Development Life Cycle (SDLC) have further emphasized the SS&M stage and some have separated it from systems implementation. While some still use the four stages of SDLC, namely feasibility study, systems analysis, systems design, and implementation (e.g., Dennis and Wixom 2003), others incorporate systems support and maintenance into the traditional SDLC or make it an independent stage (e.g., O'Brien 2001; Hoffer et al. 2005; Satzinger et al. 2007). In COBIT, this is mentioned in the three sections as mentioned above.

A team responsible for systems support and maintenance would normally consist of the team leader, systems administrator and one or more systems analysts and programmers depending on the size and scope of the system. For large enterprises, the CIO or a general operation manager might oversee the control and management of all the activities. Apart from the top management, all staff involved in SS&M would need to have strong technical and analytical abilities and experience in troubleshooting and configuring operating systems, both software and hardware. Understanding management functions and business operations is also very important. IT governance here describes how those IT staff

William YC Wang, David J Pauleen, and Michael S C Ho

under the governance of an enterprise will utilize the assigned resources to deliver services to users and to achieve business goals (Meyer 2004). While current research tends to focus on the technical side of software maintenance (e.g., developing tools and models) or tracing the design history of software packages (similar to the idea of preventative maintenance or design maintenance approaches) (Baxter 1992), some researchers claim the focus of software maintenance should also be on managerial issues as the total cost of systems ownership is increasing dominated by those issues including IT governance on "systems upgrades, change management, security management, and dealing with the failures" (Bennett 2000; Agerwala and Gupta 2006, p. 176).

In summary, we have found that the links between IT governance and SS&M needs further investigation, particularly in a context of multinational enterprises (in which case, they become interorganizational situations as all subordinates are legally independent firms). If this is the case, then we should expect that the CIOs and senior level IT staff that we interviewed in this exploratory study will concur.

Methodology

The objective of this ongoing exploratory research was to get a snapshot of the state of IT governance in SS&M in company operations and to find out the key issues that senior IT staff are dealing with as they try to keep information systems up and running and supporting current users and business needs. While these interviews are at the early stage of this research, the outcome is expected to help to refine the current research frameworks in IT governance by incorporating SS&M. Thus, we could have a better foundation to continue along this line and perhaps run surveys for confirmatory study in the long term. In this paper, top IT managers from eight multinational enterprises (see Table 1) participated in the exploratory study. As these companies are multinational enterprises, the data were recorded as rough figures based on the interviewees' answers. Exact figures of the company profiles are changing constantly due to the large scale of corporate boundaries and business.

Apart from one system vendor who was suggested by participants, other enterprises were selected from the information technology industry See Table 1). They are the major hardware companies in different sectors of the global supply chain, ranging from wafer design/production (the raw form of all semi-conductor chips, such as CPU and DRAM), peripheral device production (such as LCD and mainboard), computer systems integration, to a supply focal firm (brand owner/designer). The number of IT staff in these manufacturing companies which have large operation scales to host both systems development teams and systems maintenance teams range from 70 to 700. The participants from the headquarters of these enterprises included a corporate ERP director, an E-commerce director, two MIS senior managers (one in the Computer Integrated Manufacturing section), two chief information officers, a principal IS engineer, and a chief IS project manager (SS&M teams are under their supervision). Each of the interviews took about 1-2 hours and the associated record was reviewed again by the participant so as to ensure the validity.

Table 1. Participants' Demographic Information

Company Code	Industry	No. of Staff
1) I	LCD manufacturer	15,000 (IT: 30 in the interviewee's team, total more than 100)
2) W	IT OEM manufacturer	18,000 (IT: approx.120)
3) F	Connector & LCD manufacturer	800,000 (IT: 25 in the interviewee's team, total more than 1000)
4) A	IT Channel, Brand, and Manufacturer	2,500 (IT: approx. 70)
5) WB	IC and IO design	6,000 (IT: approx. 140)
6) AC	IT channel, brand	30,000 (more than 100 among the major sites)
7) DM	IS vendor	No record (IT Consultants:20)
8) T	Semiconductor foundry	28,000 (IT 700)

This stratified sampling method ensures a diverse and perceptive view of IT governance toward SS&M (Neuman 2000). As high level IT managers of global IT companies, they, better than anyone, know the governance concerns surrounding the corporate policies, resources and budget, limitations of software and hardware (e.g., specification of the mean time between failure for IT devices via the design phase), the impact of systems down time (e.g., information provided by one of the participants estimated a loss of at least USD 120,000 per hour if the computer systems associated with one production line go down), and other organization and management issues related to supporting the systems and operations. Moreover, the IT industry itself is in a constant state of flux and the need to coordinate the organizations' IS systems with the changing business environment challenges these senior managers to constantly serve and maintain the systems used by multinational stakeholders.

The participants were asked a number of semi-structured questions on IT governance toward the SS&M operations (Gugiu and Rodríguez-Campos 2007). As we were also interested in finding out how companies can provide more effective SS&M in their operations based on existing IT governance, we asked our participants about the roles of IT governance and how it affects the different facets of SS&M such as policies and organization, resources and budget, technology capability, and business process for value delivery. We are interested to identify the main attributes of a good IT governance structure and how it could facilitate SS&M operations and subsequently provide additional value.

Findings and Discussion

In our interviews with senior IT staff we asked a series of questions about governance structure to facilitate the standard SS&M activities, the role of SS&M in the organization and how it is changing, and how SS&M is perceived in the organization including issues of policy, resources and budget.

William YC Wang, David J Pauleen, and Michael S C Ho

We also asked questions about recruitment, IT staff training, and performance evaluation that are related to the literature, e.g., Mookerjee (2005), Wilkin and Chenhall (2010), Mithas et al. (2011), and the COBIT framework. As we have pointed out, there is very little research that links IT governance and SS&M. Perhaps most notable in our findings are the changing perceptions about executives and how they consider the IT governance structure could affect SS&M and its potential to create additional value in the modern organization. We have summarized our discussions of their views on SS&M as being responsible for IT governance in their organizations. We particularly highlight the changes in perception. Table 2 escribes how the top IT managers today perceive the interests of SS&M compared to the past views on SS&M activities of IT staff.

However, on the one hand, what we are hearing is that SS&M staff, through their ongoing work with the organization's information systems and the people who use these systems (essentially everybody), have developed a fine and considered understanding of many facets of the business. With their 'radar system' and their sense of the 'pulse' of the business they seem to be a kind of organizational nerve centre. More than one participant suggested that important aspects of organizational knowledge management might well reside in SS&M. Ironically, the one thing that does not seem to have changed in the last 25 years is that system developers are still not consulting with SS&M staff. Most of these multinational enterprises separate the development team from the SS&M team as two different IT groups. The current IT governance structures residing in these companies do not seem to have

Table 2 Past and Present Views on SS&M (issues adapted from Glass and Noiseux, 1981)		
Reasons	Today's View	Supporting Quotes
SS&M is intellectually very difficult.	A high level of rigor *is* required and the challenges of SS&M can be stimulating.	*"SS&M is interesting and challenging since our IT staff can learn from all business flows in a global organization. It is the quickest way for an IT professional to increase his/her personal knowledge assets. As a CIO, I would support the idea of valuing the work and putting resources to keep the knowledge assets."*
SS&M is technically very difficult.	SS&M is not only a technical issue but also a managerial challenge.	*"There is a lot of work to do after new systems are adopted. The connection between new systems and legacy systems, modification of interfaces, and conflicts between user demands will need to be addressed by SS&M."*
SS&M is unfair: necessary information is not available and the original developers are usually long gone.	Most IT governance structures let the systems design teams normally consult with users but not the SS&M staff.	*"The development/adoption team emphasizes the logic of business flows. Although they consult with the users, they seldom work with the SS&M team in the systems development stage."*
SS&M is no-win: people only want problems solved.	SS&M is not just about trouble shooting, but equally importantly about diagnosing changes in the business environment.	*"Systems support and maintenance is not only about the protection of existing enterprise value but it is also the 'radar system' detecting changes in the business environment. When the external environment changes, the enterprise strategy and operation will need to react to it. Information systems link closely with all the business flows. Therefore, changes in business operations cause conflict with the existing information systems."*
SS&M work does not result in glory, noticeable progress or chances for 'success'.	SS&M has the reputation for being somewhat boring, but in fact, it is interesting and challenging and provides significant value to the business.	*"Adoption and SS&M are of equal importance and the global CIO/CEO considers good SS&M to be a basic requirement. In fact, the SS&M team knows the whole picture of corporate functions/ strategies better than the adoption team as they are facing the users and hosting the corporate datasets used for multinational operations."*
SS&M lives in the past. The quality of yesterday's development work is often poor.	Good IT governance should emphasize the creative and innovative feedback from the SS&M team for systems upgrade, integration, and future projects.	*"Through SS&M, IT staff are able to sense the pulse of the business."* *"The SS&M team often creates effective support tools that are not considered in the adoption phase, e.g., log tool, alert systems, control systems for production machines etc."*

Perhaps the most pronounced change is that the practitioners in these giant multinational enterprises perceive SS&M as much more than just a technical service. While Edwards (1984) pointed out that SS&M was a critical, if unnoticed, part of the IS development process, and El Sawry and Nanus (1989) recognized that SS&M was tending to get 'traded off' in favor of system development, our participants make a strong case for the critical role of SS&M within the business as a whole. They repeatedly state the role of SS&M in supporting the business. This is of course done through the updating and modification of systems based on user input – including those involved in strategizing around the wider business environment.

joint performance measurements for these two groups. Some of the interviewees are aware of this situation but there does not seem to bee any referential solutions from the literature for them. This is perhaps to the detriment of the whole organization. On the other hand, most CIOs admit that systems development teams normally consist of participants from other departments, who gain credit more easily than the SS&M teams. That is, SS&M teams in most enterprises still solve the problems left during the systems development period but they do not get the major recognition and lack appropriate key performance indicators to evaluate their work after a systems project is implemented. While some of the CIOs mentioned they encourage the SS&M teams to provide

William YC Wang, David J Pauleen, and Michael S C Ho

innovative ideas and suggestions to the front end users in various functional departments for both systems improvements and business process improvements, there is a need for certain IT governance mechanisms as incentives for such practices

The Attributes of IT Governance Contributing to Effective SS&M

Most of the CIO participants strongly concurred that more attention was needed in SS&M from the top management, not just requirements and expectations but resources, support, and recognition of the team's efforts and the potential value. When asking whether the enterprises encourage their SS&M teams to provide innovative ideas and solutions to the users, six participants' answers were positive and three of them said that there are either documented policies or unofficial feedback to those who could provide ideas and contribute extra value. One of the remaining two participants was neutral on this. The other is an exception and was negative about the idea. As a CIO, his philosophy is to be conservative and expect the IT staff in SS&M to simply follow the standard operating procedure.

They also confirmed that most academic theory was related to systems adoption and there is a lack of theoretical models they can refer to for SS&M governance. That is, they have built up the IT governance structure for SS&M activities through experience rather than from the literature. At least three participants mentioned that the SS&M team normally comprises several groups when the business scale increases to multinational level. There will then be decisions made about the organizational capability for the SS&M team – whether it should be centralized or distributed, and how many tiers of services should be formed.

> As described by the Senior IT Manager of F company, "While the data maintenance is centralized in our headquarters, there are distributed SS&M teams serving the worldwide sites. Additionally, if a subordinate keeps a level of operation scale with multiple functions (such as manufacturing, sales, and procurement), we will set service teams into 2-3 tiers to fulfil the needs of desktop support, infrastructure maintenance, and control of business flow and data warehousing. Such a concept is mainly developed based on our own experiences or learned from other companies in this industry."

One participant anticipated that theory development in IT governance for SS&M could be difficult as it was often in reaction to a wide range of emerging business, environmental and technical issues. However, most participants could easily list a wide range of attributes they would like to see further investigated. These are collated and summarized in Table 3 ased on the major organizational capabilities of IT governance suggested by the literature including technical capability, resource capability, organizational capability, business process, and the potential to contribute extra value to the enterprises (Wilkin and Chenhall 2010).

Table 3 Capabilities of IT Governance for SS&M

Areas for Attention	Attributes
Technical Capability	Technical skills training and documentation
	Data consistency, protection, quality, and maturity
	Techniques in problem detection and analysis
	Technical plans to tackle differences between SDLC and real scenarios
Resource Capability	Budget planning and cost control
	Resources for multi-site SS&M teams
	Resource capability for emergent issues and business changes
Organization Capability	Performance measurement
	IT staffing and training
	Structure of SS&M team and outsourcing decisions
Business Processes	SS&M documentation
	Process of SS&M control and decision making
	Auditing for maintenance activities
Value Creation	Maintaining knowledge of maintenance
	Investigation of key business value through SS&M
	Data mining, knowledge management, and the association rules of problems

The areas in which the participants would like to see more academic knowledge developed mirror the areas that they mentioned in the section above on IT governance and SS&M. They want and need more practical and theoretical guidance and support from academia with the issues that they are experiencing at the coalface. Participants seem to believe that research in these areas will lead to an increasingly sophisticated approach in both technical and management skills. The result should help future IS managers to plan and control SS&M activities more effectively to ensure information management capability and that it is better integrated into the overall business strategy and enterprise performance as suggested by Mithas et al. (2011).

Conclusions

As understood by our senior level IS-based participants, SS&M clearly matter to organizations and IT governance plays an important role in the effectiveness of SS&M operations. In our participants' views it is a critical and undervalued link between the business and IT sides of the organization. It is potentially a source of organizational innovation and knowledge. However, in practice SS&M might not be well integrated into either the IT side or the business side of the organization and its value as a potential link is under-utilized. Part of this neglect may be due to the

William YC Wang, David J Pauleen, and Michael S C Ho

inherent drawbacks of SS&M as Glass and Noiseux espoused back in 1981. SS&M is expensive and if realistically accounted for upfront in the SDLC is a potential deal killer. SS&M also still appears to be unglamorous, bearing the brunt of blame when things go wrong, and little of the kudos when they go right. These issues tend to reflect a lack of awareness of the potential value of SS&M on the part of senior management, particularly on the business side.

Our participants' stories tend to confirm this and if we are to believe them, SS&M has many potential areas where it can help the organization. However, without recognition of such value, IT governance focusing on SS&M and research that they can work with, the odds are that the situation may not change much for many years to come. As far as we could ascertain, very few studies in the area of SS&M consider integral governance aspects of the organization and business processes along with SS&M services after enterprise wide systems are deployed. Therefore, we would like to get the ball rolling and issue a call for academia and business to develop an agenda for research in IT governance on SS&M. Table 5 provides a good starting point for research. One example is exploration of the resource planning and control mechanism of IT governance for multinational enterprises and its relationships to SS&M.

Some key areas to focus on could include a governance framework for SS&M that incorporates frameworks for operational and business control and decision-making. These could include cost/benefit analyses for various approaches to SS&M, benchmarking and auditing procedures that can account for the full gamut of SS&M-related activities as discussed by our participants including aspects not generally considered part of SS&M such as business intelligence and knowledge management. Another example could be the impacts on IT governance, SS&M, and business operations when adopting new technology such as the post Radio Frequency Identification (RFID) adoption in a context of multinational enterprises.

As evidenced by our participants' comments we believe that business will warmly embrace a cooperative research agenda with academia. Over time, increasing our understanding of IT governance issues and their current and potential roles in the SS&M activities should go a long way to improving enterprise performance since it is a critical component of information management capability (Wilkin and Chenhall 2010). We see a tremendous amount of research potential, particularly linked with the continuous technology development and business changes that could affect IT governance and subsequently the efforts of SS&M. In the near future, we hope to see more studies and investigations on this topic, and in business, recognition of the important, often critical role that SS&M of enterprise systems plays in the post-adoption stage.

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