

Implementing IT Service Management: A systematic literature review

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Abstract

This article provides a systematic review of existing research related to the implementation of IT Service Management (ITSM) and the Information Technology Infrastructure Library (ITIL). The review's main goals are to support research; to facilitate other researchers' search for relevant studies; and to propose areas for future studies within this area. In addition, we provide IT managers with useful information on ITSM and ITIL, based on research-based knowledge of their implementation. The review results suggest that motives, critical success factors, implementation status, and benefits are the most frequently studied areas, and that each of these areas would benefit from further exposure.

1. Introduction

This article reviews existing research on the implementation of IT Service Management (ITSM) and the Information Technology Infrastructure Library (ITIL). The aim of this literature review is threefold. First, we want to provide an updated overview of ITSM and ITIL that captures the research activities in these rapidly evolving areas. We restrict the focus to manuscripts that explicitly incorporate implementation considerations. Implementation is understood in this context as the process of adapting to ITSM principles and/or introducing the best practice recommendations prescribed by ITIL. In this study, ITSM is defined as an approach to IT operations that is characterized by its emphasis on IT services, customers, service level agreements, and an IT function's handling of its daily activities through processes (Conger, Winniford, & Erickson-Harris, 2008; Marrone & Kolbe, 2011). ITSM manages the IT function as a service function. This stands in contrast to more technology-centered approaches to IT operations. There is no single authorized text that defines ITSM, but the concept is portrayed in various book, articles and white papers (Palmer, 2005; Jan van Bon et al., 2008). As van Bon notes (2002): "Providers of IT services can no longer afford to focus on technology and their internal organization, they now have to consider the quality of the services they provide and focus on the relationship with customers." According to the literature, the IT function should be a service organization that provides IT services to a business, and the goal is to build and deliver IT services that meet business needs and requirements (Commerce, 2007b). ITIL, on the other hand, is defined here as a set of prescribed practices that an IT function may employ in order to achieve IT Service Management (McNaughton, Ray, & Lewis, 2010). ITIL version 1 was developed during the 1980s by a British public body called the Central Computer and Telecommunications Agency (CCTA). ITIL V1 grew from a collection of best practices observed in the industry. ITIL version 2, which was released between 2000 and 2002, became so popular that ITIL is now counted as the de facto standard for IT Service Management worldwide. ITIL version 3, published in 2007 and later revised in 2011, explains in five volumes the various tasks

an IT services supplier must perform. These processes describe how an IT service moves through its life cycle: how the IT service should be planned for and built; how the IT service and related changes should be validated, tested and deployed; how events and requests regarding IT services should be handled; how the basic configuration supporting the IT service should be controlled; and how operational problems should be solved (Taylor, 2007). ITIL is a trademark, and is today owned by the Office of Government Commerce in the UK. In addition to the five official volumes of version 3, a variety of introductory books are available on the topic (e.g. (Behr, Kim, & Spafford, 2005; Taylor, 2007). In order to achieve certification, IT functions can apply the COBIT and the ISO/IEC 2000 standards. IT professionals have a similar certification scheme based on an authorized four-level qualification program: ITIL Foundation, ITIL Intermediate, ITIL Life Cycle, ITIL Expert, and ITIL Master. ITSM and ITIL are both generally concerned with the operational activities of information technology management, often known as IT operations, and not with system or technology development. In summary, ITSM is the concept and ITIL is the framework IT functions can apply to adopt service management to IT operations. However, the application of the two terms is not always consistent; the two terms are used interchangeably in the literature. For example, when a firm is asked if it is adopting ITSM, it may base its answer on the current status of its ITIL project. However, as there are other frameworks that firms can apply for adopting ITSM, e.g. Microsoft MOF, HP ITSM and IBM ITPM, the two terms are not synonymous. Figure 1 shows the relationship between ITSM and ITIL, an overview of the frameworks, and the certification and qualification schemes.

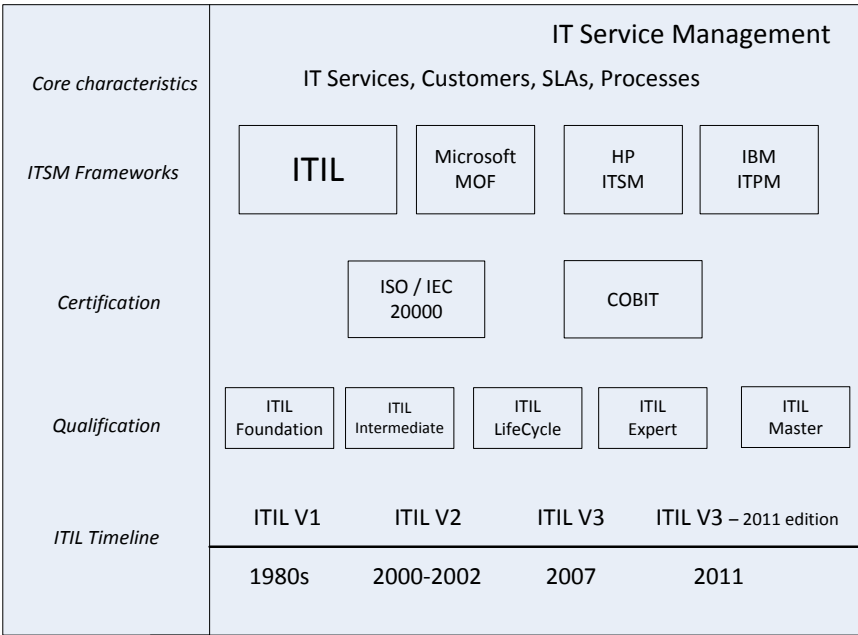


Figure 1: An overview of the relationship between ITSM and ITIL

Our second goal is to structure our information in such a way that research contributions can easily be linked to each other and compared. This will ease researchers' search for relevant studies. Third, structuring the literature in a detailed and systematic manner also clarifies which issues are not well covered. We intend to identify knowledge gaps and opportunities for contributions, in order to guide future research.

There are several reasons why ITSM and ITIL should attract researchers. First, there is evidence that ITSM and ITIL are highly popular among IT managers. Although it is difficult to find accurate data on its global spread, a visit to ITIL's official website (www.itil-officialsite.com) and the itSMF site (www.itsmf.com) – itSMF is a worldwide independent organization and network concerned with promoting ITIL and best practice in IT service management – provides evidence of interest and activity. We find, for example, that itSMF has over 5000 member companies around the world and more than 70,000 individual memberships spread over more than 50 regional chapters; that professionals from more than 150 countries have passed the various ITIL exams, which have been translated to more than 20 languages; that more than 270,000 exams were taken in 2010; that 24 ITIL software tools are endorsed to be ITIL compatible; and that the last annual conferences of the Australian and Norwegian itSMF chapters each had more than 600 delegates, and that the US chapter is expecting 1800 delegates at their upcoming 2012 conference. In addition, the website visits show a large number of local meetings, workshops, and web seminars. Given their topicality, ITSM and ITIL are issues that would benefit from exposure to potential theoretical foundations. Second, there is a growing research interest in IT function characterization. Extant literature is nevertheless fragmented and not properly integrated (Guillemette & Paré, 2012). Guillemette and Paré (2012) argue that it is hardly possible for any IT function to make specific contributions to an organization if its clients are not satisfied, systems are not available, and projects are not delivered on time and within budget. This argument matches the principles of ITSM and ITIL. Third, ITSM and ITIL open up an array of research perspectives, e.g. service innovation (de Jong & Vermeulen, 2003), the capabilities of the IT function (Peppard & Ward, 2004), the introduction of process management (Hammer, 2010), business/IT alignment (Chan & Reich, 2007), and IT governance (Van Grembergen, De Haes, & Guldentops, 2003).

The purpose of this study is to review existing research on ITSM and ITIL. We set the contextual limitation to contributions presenting research on their adoption and implementation, including antecedents and consequences. We set the temporal limitations for this review to contributions from January 2000 until end of August 2012. We utilize research of verified quality, which means that we only address articles in peer-review journals and from reputable conferences. We describe our methodology in Section 2, and present our findings in Section 3. In Section 4, we analyze and discuss existing research in order to identify knowledge gaps, and we suggest opportunities and approaches for future research. Section 5 concludes the article.

2. Method

This study is a systematic literature review. A systematic literature review is a rigorous review of research results (B. Kitchenham, 2004; Okoli & Schabram, 2010). The two main objectives for this review are: to identify, classify, and summarize existing research on ITSM and ITIL implementation; and to identify areas and opportunities for future research. The steps in the systematic literature review method are documented below.

2.1 Research questions

The research questions specifically addressed by this study are:

RQ1: What research has been conducted on ITSM and ITIL implementation? Who has published, when, and where (journal, conference)? We intend to seek out and catalogue the research that has been conducted for the benefit of current and potential researchers in this area.

RQ2: What research questions have been addressed? We want to know which subjects the existing research has covered, and record key questions that the research has sought to answer.

RQ3: What theoretical frameworks and reference theories have been applied to study the topic? We want to know which theories and models have been used in existing research.

RQ4: What research methods have been used? As a guide to future studies, we attempt to identify the approaches that have been adopted. We will use Orlikowski and Baroundi's (1991) categories of conceptual and empirical to organize the approaches. Conceptual research refers to studies that formulate emerging concepts, models and frameworks, and empirical research refers to surveys, interviews, case studies, multi-method research, and experiments.

RQ5: What conclusions can be drawn from existing research? We intend to summarize and analyze findings from existing research in order to draw conclusions on central issues.

2.2 The search process

The search process was organized according to guidelines found in Webster and Watson (2002), Kitchenham et al. (2009), and Okoli and Schabram (2010).

Our key words were "IT Service Management" and "Information Technology Infrastructure Library" and their abbreviations, "ITSM" and "ITIL." Our goal was to identify articles presenting research of validated quality. As major contributions are likely to be in leading journals, we started by searching journals from the Association of Business Schools' *Academic Journal Quality Guide*. We selected relevant publications from the Information Management category at grade 4, 3, and 2. Next, we searched proceedings from the most prestigious international Information Systems conferences. Finally, we searched various online directories. In total we searched 26 journals, proceedings from seven international conferences, and four online databases. The selected journals, conferences, and databases are shown in Table 1. Following the recommendations of Webster and Watson (2002), we also reviewed the citations in the articles identified in the previous steps.

Table 1: Databases, journals, and conference proceedings searched by this study

Journals	Conferences	Databases
MISQ Information Systems Research Journal of Management Information Systems Information Systems Journal European Journal of Information Systems Communication of the ACM Information and Management Journal of Information Technology Decision Support Systems Journal of the Association of Information Systems Journal of the American Society for Information Science and Technology Journal of Strategic Information Systems INFORMS, Journal of Computing Information & Organization Annual review of Information Science and Technology Journal of Information Science Journal of Global Information Management Information Systems Management Information and Software Technology International Journal of Information Management Information Society Information Systems Frontiers	ICIS – International Conference on Information Systems AMCIS – Americas Conference on Information Systems ECIS – European Conference on Information Systems PACIS – Pacific Asia Conference on Information Systems MCIS – Mediterranean Conference on Information Systems HICCS – Hawaii International Conference on System Sciences	ACM Digital library EBSCO Host Emerald Insight ISI web of Knowledge

2.3 Inclusion and exclusion criteria

Our review targeted peer reviewed articles on the implementation of IT service management and the IT Infrastructure Library, published between January 1, 2000 and August 31, 2012. Only articles in English were included. Our search included articles on the following subtopics:

- Antecedents to implementation, including reasons to implement and preconditions for implementation
- Strategies and methodologies for implementation
- Status of implementation
- Consequences of implementation, including outputs and benefits

Articles on the following topics were excluded:

- Non-research articles that were purely descriptive
- Articles presenting research in progress
- Articles about education
- Articles that did not match the inclusion criteria

2.4 Data collection

The data extracted from each study were:

- The source (journal or conference) and full reference
- The authors, their institutions, and the countries where they were situated
- Classification of the research methods
- Theoretical frameworks and reference theories used
- Main topic area
- Research questions
- Summary of the study, including the main research questions and their answers

Methodologically, we followed the recommendation of Kitchenham et al. (2009); one researcher extracted the data, and the other checked the extraction. When there was disagreement, we discussed the issues until we reached an agreement.

3. Findings

This section presents the findings from the review. Below, we discuss the answers to our research questions.

3.1 What research has been conducted on ITSM and ITIL implementation?

Overall we identified 37 relevant studies: 21 journal articles and 16 conference articles. Tables 2 and 3 provide an overview of the journals and conference proceedings. A complete list of the articles is given in the Appendix.

Table 2: ITSM and ITIL research published in journals

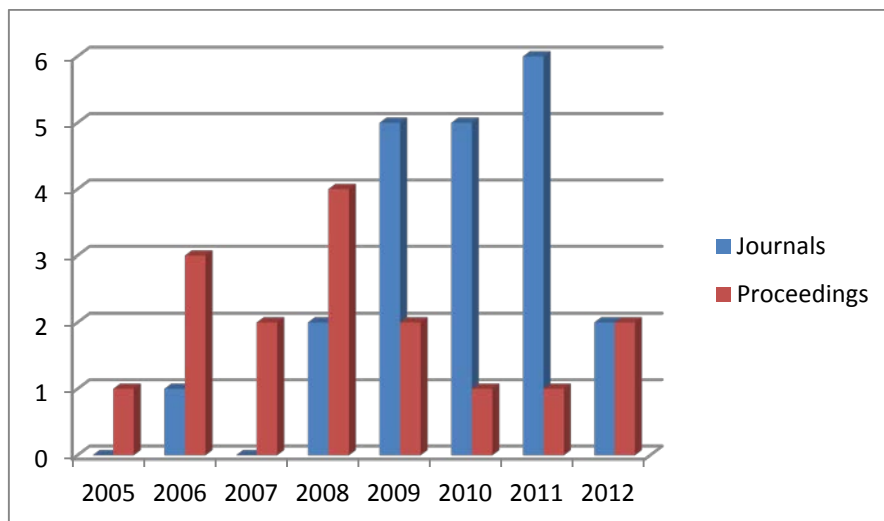
Journals	Article ID	Year
American Journal of Economics and Business Administration	J1	2011
BMC Medical Informatics and Decision Making	J2	2011
Business & Information Systems Engineering	J3	2011
Campus-Wide Information Systems	J4	2008
Electronic Journal of Information Systems Evaluation	J5	2011
Economics and Management	J6	2011
Information & Management	J7	2010
Information Management & Computer Security	J8	2008
Information Systems and E-Business Management	J9	2010
Information and Software Technology	J10	2012
Information Systems Management	J11 - J14	2009, 2010
International Journal of Business & Management	J15	2012
International Journal of Information Management	J16	2009
International Journal of IT Standards & Standardization Research	J17	2009
Journal of Computer Information Systems	J18	2009
Journal of Global Information Technology and Management	J19	2010
Technology and Investment	J20	2011
Wirtschaftsinformatik	J21	2006

Table 3: ITSM and ITIL research published in conference proceedings

Conference	Article ID	Year
International Conference on Information Systems	C1, C2	2008, 2011
Americas Conference on Information Systems	C3-C7	2008, 2009, 2010, 2012
European Conference on Information Systems	C8-C12	2005, 2006, 2007, 2012
Pacific Asia Conference on Information Systems	C13	2006
Hawaii International Conference on System Sciences	C14-C16	2006, 2008, 2009

The earliest study identified by this review was a conference article published in 2005. The first journal article was published in 2006. Table 4 shows that the number of journal publications is increasing every year, while the number of conference articles peaked with four in 2008.

Table 4: Number of studies per year



Who is leading research in this area? Overall, Australian (11 articles), North American (7 articles), and European researchers (17 articles, spread among 11 countries) dominate the studies. Researchers at the University of Southern Queensland have been especially active; they are involved in seven of the 36 studies. The Pacific is represented with one additional study (New Zealand). Four studies have Asian authors; China and Malaysia each have two studies. South America is represented with one study (Brazil). Africa is not represented. Table 5 provides an overview of author affiliation details.

Table 5: Author affiliation details

Country / Researcher	Research institution	Article ID
Australia <ul style="list-style-type: none"> • Arora & Bandara • Cater-Steel • Gacenga • Jin & Ray • Marrone • McNaughton & Ray • Tan • Toleman 	Queensland University of Technology University of Southern Queensland University of Southern Queensland University of New South Wales Macquarie University University of New South Wales University of Southern Queensland University of Southern Queensland	C13 J11, J17, J18, C2, C9, C10 C2 C15 J3 J7 J18, C2, C9 J18, C2, C9
Austria <ul style="list-style-type: none"> • Hoerbst, Hackl, Blomer, & Ammenwerth 	University for Health Sciences	J2
Brazil <ul style="list-style-type: none"> • de Espindola, Luciano, & Audy 	PUCRS - Pontifical Catholic University of Rio Grande do Sul	C16
Canada <ul style="list-style-type: none"> • Kumbakara 	NCR Corporation	J8
China <ul style="list-style-type: none"> • Chan • Wan • Wan & Wan 	Hong Kong Polytechnic University Hong Kong Science and Technology Parks Corp. South China University of Technology	J4 J4 J20
Czech Republic <ul style="list-style-type: none"> • Neničková 	Brno University of Technology	J6
Germany <ul style="list-style-type: none"> • Disterer • Kolbe • Marrone • Wagner 	University of Applied Sciences and Arts University of Göttingen University of Göttingen J.W. Goethe-University	C12 J3, J9 J9 C14
Malaysia <ul style="list-style-type: none"> • Kanapathy 	University of Malaya	J15

<ul style="list-style-type: none"> • Khan • Nabiollahi, Alias, & Sahibuddin 	Scope International Sdn. University Technology Malaysia	J15 J1
Netherlands <ul style="list-style-type: none"> • Muhren • Van Den Eide • Van de Walle 	University of Tilburg Unknown University of Tilburg	C11 C11 C11
New Zealand <ul style="list-style-type: none"> • Kashanchi & Toland 	Victoria University of Wellington	C21
Norway <ul style="list-style-type: none"> • Iden • Langeland 	Norwegian School of Economics and Business Adm. Norwegian Armed Forces	J14 J14
Poland <ul style="list-style-type: none"> • Zajac & Soja 	Cracow University of Economics	C7
Portugal <ul style="list-style-type: none"> • Coelho & da Cunha • Lapão 	University of Coimbra The Universidade NOVA de Lisboa	C5 J5
Spain <ul style="list-style-type: none"> • Mesquida, Mas, Amengual & Calvo-Manzano 	University of the Balearic Islands, Mallorca	C7
Sweden <ul style="list-style-type: none"> • Flores, Rusu & Johanneson 	Stockholm University	J10
Switzerland <ul style="list-style-type: none"> • Hochstein, Tamm, & Brenner 	University of St. Gallen	C8
UK <ul style="list-style-type: none"> • McBride • Mohammed 	De Montfort University The University of Salford	J16, C10 C1
USA <ul style="list-style-type: none"> • Conger • Dattero • Duffy & Denison • Erickson-Harris • Galup • Lewis • Pollard • Winniford 	University of Dallas Missouri State University Wright State University Enterprise Management Associates Florida Atlantic University Southern Hampshire University Appalachian State University Mesa State College / Grand Junction	J12, C3 J13 C4 J12, C3 J13 J7 J11 J12, C3

3.2 What research questions have been addressed?

We want to identify the subjects that the existing research has covered, as well as catalogue key questions that research has sought to answer. First, we deal with empirical research. This research sorts itself rather evenly into the following categories: antecedents to implementation (14 articles), implementation (16 articles), and consequences (12 articles). Within the antecedent category, the most popular research question is related to factors for a successful implementation, which overall is the most frequently asked question. Five studies deal with the motives. Within the implementation category, nine articles have addressed implementation status, while seven articles have investigated strategies for implementation, including methodological issues. Within the consequences category, seven articles deal with the outcomes and benefits of implementation. One article is concerned with performance measurement, while three articles have studied ITIL's effects on IT governance and IT/business alignment.

Table 6: Research subjects addressed in empirical research

	CONCEPTS		
	Antecedents	Implementation	Consequences

Article	Motives	Critical success factors	Strategies and methods	Implementation status	Outcomes and benefits	Performance measurement	IT Governance and IT/B alignment
J2				X			
J3		X		X	X		
J4					X		
J5							X
J9				X	X		
J11	X	X	X				
J12				X			
J14		X					
J15		X					
J16		X	X				
J17	X	X			X		
J18		X					
J20		X					
J21							X
C1	X	X	X				
C2						X	
C3		X		X			
C4							X
C5				X			
C6				X			
C7				X			
C8		X			X		
C9	X	X					
C10		X	X				
C11							
C12	X				X		
C13			X				
C14			X				
C15			X				
C16				X			
SUM	5	13	7	9	7	1	3

Of the 36 contributions, seven are categorized as conceptual research, all of them journal articles (J1, J6, J7, J8, J10, J13, and J19). J1 investigates whether knowledge management might be a candidate for IT service architecture, and intends to develop a framework for IT service architecture requirements. J6 discusses critical success factors and critical performance indicators for the ITIL implementation by drawing on various literatures. The authors of J7 are designing a framework for evaluating IT service management efforts. J8 and J10 deal with standardization issues: J8 discusses the role of standards in IT service management, while J10 reviews the literature on process improvement efforts in IT service management based on the ISO/IEC 15504 standard. J13 develops a method for improving IT service management processes, and J19 conducts a literature review on benefits and measurement issues in developing a performance measurement framework for IT service management.

3.3 What theoretical frameworks and reference theories have been applied to study the topic?

Research on ITSM and ITIL makes use of a variety of theoretical frameworks and reference theories. We have identified 19 different approaches; most of them are applied by one study only. Examples include contingency theory, cultural differences, organizational learning, IS ServQual, and balanced scorecard. The most widely used reference theory is the critical success factor framework (CSF), which five articles have applied toward identifying factors for a successful implementation. In order to assess the current implementation status in firms, three articles use the capability maturity model (CMM) for classifying implementation progress. Resource-based theory, agent network theory, and alignment

theory are each applied by two studies. We have not been able to find any theoretical framework or reference theory in ten of the 36 studies.

Theoretical frameworks and reference theories	Number	Articles
Critical success factor (CSF)	4 (5)	J6, J11, J18, C5, (C8) (C8 do not explicitly state that they use it)
Maturity models (CMM)	3	J3, J9, C5
Resource-based theory	2	J15, C10
Agent network theory	2	J13, C10
Alignment theory	2	J21, C4
No specific framework or reference theory identified	10	J7, J12, J14, J16, C3, C6, C9, C12, C13, C16

3.4 What research methods have been used?

In this section, we report our analysis, which follows Orlikowski and Baroundi's (1991) categorization scheme. The research contributions were grouped into two broad categories: conceptual and empirical. The conceptual research approach refers to studies that formulate concepts, models, and frameworks, including literature reviews. Empirical research includes research with some form of empirical data collection and analysis. The empirical contributions were further categorized into five sub-categories: surveys, interviews, case studies, multi-method, and experiments. Our analysis reveals that case studies are the most frequently applied research strategy, with seventeen articles, followed by surveys, with eight articles. Table 6 shows the results of our categorization.

Table 6: Research design applied by research

Research design	Number	Article ID
Conceptual	8	J1, J6, J7, J8, J10, J13, J19, C15
Empirical	29	
• Surveys	8	J3, J9, J14, J15, J20, C7, C12, C16
• Interviews	2	J12, C3
• Case studies	17	J2, J4, J5, J11, J16, J18, J21, C1, C2, C4, C5, C6, C8, C10, C11, C13, C14
• Multi-method	2	J17, C9
• Experiments	0	

Of the conceptual articles, J8, J10, and J19 are literature reviews.

3.5 What conclusions have been made from existing research?

In this section we analyze findings from current research and investigate what conclusions can be made. In our analysis we focus on the four topics that have attracted the most researchers: motives, critical success factors, implementation status, and outcomes and benefits (Table 6).

Conclusions on motives

Why do IT managers decide to adopt IT service management and implement ITIL? Five contributions deal with this question: two case studies, two surveys, and one multi-method study involving surveys and cases. Research finds that implementation is motivated by a variety of reasons, some more frequently mentioned than others. Four motives stand out: 1) to improve operational efficiency and reduce IT spending (J11, J17, C1, C9); 2) to improve service orientation and focus on service delivery (J11, J17, C1, C9); 3) to improve alignment, both externally with customers and internally between IT

functions (J11, J17, C1); and 4) to improve service quality and thereby improve customer satisfaction (J11, C1, C9). In addition, a multi-case study (J11) involving four companies found that three of the firms were implementing ITIL as a response to an operational crisis in the past. These incidents led to severe infrastructural breakdowns and service downtime. One UK case study (C1) found that implementation had its rationale in the new public reform, a reform that is legitimating improvement programs and work restructuring. More specifically, IT management argued that current practice was not compliant with best practice. One article (C12), studying certification motives among ITSM firms, found that such investments overall were externally motivated (market and customers), pointing at issues like competitive advantage, trust, and reputation.

Conclusions on critical success factors

Critical success factors – including drivers and barriers to effective implementation – are the most frequently addressed theme of research. Thirteen articles (36%) address this research theme; five surveys (J3, J15, J20, C3, and C9), six case studies (J11, J16, J18, C1, C8, and C10), one multi-method study (J17), and one ranking-based Delphi study (J14).

The Delphi study found that senior management involvement, competence and training, information and communication to staff and stakeholders, and culture were the most important factors for successful implementation. The six case studies and the multi-method study support this conclusion. Top management support, including a manager who acts as a project champion; ITIL and process work training programs for internal staff; broad organizational involvement in process design and ongoing information; and a culture that is aligned with ITSM characteristics like process thinking, cross-functional collaboration, and willingness to change, are the factors most frequently mentioned. In addition, studies found that initiatives benefit from the involvement of an external expert and timely ITSM software package implementation.

The five surveys provide an additional perspective, as they also focus on the barriers to implementation. J3, for example, found that lack of resources and organizational resistance are the two most serious challenges to successful implementation. However, they found that challenges decrease as implementation matures. J15, which studied the correlation between implementation maturity and size, found that implementation progress is positively associated with firm size, annual turnover, and total number of employees and IT staff, indicating that large firms are more likely to succeed than medium and small firms. Overall, however, the findings are not conclusive, as they spread themselves over an array of barriers.

Conclusions on implementation status

Nine articles (25%) deal with the implementation status of ITSM and ITIL. Four of them, however, report from two specific studies, leaving us with seven independent studies. Five of the studies are based on surveys, while two studied progress through case studies.

The surveys all address implementation status on a broad scale, treating ITSM and/or ITIL as one variable. None of them report on the status on each, or a selection, of the different processes, only on the concept as a whole. A 2009 survey (J12) with 364 responses from U.S. IT managers found that 45% of the participating companies were using ITIL, and that 15% were in the planning stage. A similar Brazilian survey with 186 responses, also published in 2009 (C16), found that of the responding firms, 21% were using ITIL and a total of 51% were planning for implementation. Correspondingly, a European study with 215 responses, which compared ITSM adoption in developed and transition economies in

Europe (C7), found that out of the firms in developed countries, 20% reported that they were using ITSM. Only 8% of the firms in transition countries were using ITSM. A 2008 Central European study of 75 hospitals (J2) found that five hospitals (7%) had implemented parts of ITIL and eight hospitals (11%) were planning to implement ITIL over the next two years. Two-thirds of the hospitals did not consider implementing ITIL.

A 2009 survey (J3), studying implementation maturity in firms by using a sample of 503 members of the UK and US itSMF chapters, found that more than half of those surveyed assessed their ITIL implementation level as either CMM level 2 (repeated, 31%) or level 3 (defined, 25%). Thirteen percent reported their status to be at level 1 (initiated) and 31% reported a status of either level 4 (managerial) or 5 (optimized).

A case study in a European food industry firm (C5) reported implementation progress to be higher for ITIL's service support processes than for the service delivery processes, with change management as the most mature process. A case study involving three Nicaraguan firms (C6) found financial management, security management, service catalogue management, and capacity management overall to be the most mature processes in the three firms. As these processes are within ITIL's service delivery area, these Nicaraguan findings contrast the findings from the European case study.

Conclusions on outcomes and benefits

What are the outcomes and benefits of introducing ITSM and implementing ITIL? Six studies found answers to this question (J3, J4, J9, J17, C8, and C12). Two of them report from one specific study, leaving us with five independent studies on this issue. Two of the studies are based on surveys (J3, C12), two on case studies (J4, C8), and one on a multi-method study involving surveys and cases (J17).

Overall, studies found that ITSM and ITIL lead to a variety of outcomes. Because the studies use different methods and terms, their findings are not easily comparable. However, based on the frequency with which these studies report improved service quality and customer satisfaction, there seems to be a consensus that these two factors are most important. Improved service quality is a broad term in these studies, and includes benefits like reduced downtime, improved response and resolution time to incidents, and user calls. As a consequence of implementing ITIL, IT functions are more service-, customer-, and user-oriented. Findings also indicate that ITIL leads to improved structure and coordination within the IT function. This conclusion is supported by findings like improved, standardized, and documented processes (one best organizational practice), clarified roles and responsibilities, better synchronization of the various IT services, and increased transparency. The studies also found financial gains, like improved return of investment and improved IT resource utilization, but cost issues are ranked low overall among the outcomes. This indicates that firms are not addressing cost issues in their implementation efforts, or are not calculating savings.

4. Discussion

This systematic literature review reveals that existing research is dominated by a few research questions: What are the underlying motives for implementing? What are the key factors for implementation success? What is the implementation status? What are the outcomes and benefits of implementation? In this section, we analyze and discuss present research in order to identify knowledge gaps and opportunities for future research.

Motives: Analysis and research opportunities

Research on motives presents a variety of reasons why IT functions are adopting ITSM and implementing ITIL. Two approaches have been applied to answer this research question. Case studies have mainly asked why companies are implementing, and surveys have presented the respondents with predefined alternatives and asked the respondents to state the relevance of each alternative. Our review has not identified any underlying theory used to address this research question. With the exception of C1, the studies fail to discuss motives in relation to context (what are the external conditions, what are the challenges that companies face, and what are the strategic decisions that lead companies to implement?). Furthermore, why are IT functions implementing best practices, practices found to be useful in other firms? One article (C9) mentions that for some IT managers ITIL is a question of legal compliance, but this is not discussed or elaborated.

There is no doubt that ITIL has become fashionable, but what are the underlying reasons why IT managers decide to introduce IT service management? The answers are revealed by research: firms want to increase their operational efficiency and improve service quality, customer satisfaction, and alignment. In sum, research finds that IT functions seek to improve their operation, but little is known about IT managers' underlying motives. We will offer two potential approaches to future research in this area: DiMaggio and Powell's three types of isomorphism (Paul J. DiMaggio & Powell, 1983; P.J. DiMaggio & Powell, 1991) and contingency theory (Scott, 1981; Woodward, 1958).

DiMaggio and Powell (1991) define a perspective on organization behavior, which they term the "new institutionalism." This perspective rejects the rational-actor models of classical economics, which are present in existing research on ITSM and ITIL. Instead, DiMaggio and Powell seek to give cognitive and cultural explanations of an organizational phenomenon and the underlying motives by which this phenomenon is introduced and developed. They use the term isomorphism to understand why the processes or structure of one organization are similar to those of another, and whether this similarity, under comparable constraints, is the result of imitation or independent development. DiMaggio and Powell (1983) present three types of isomorphic pressure: coercive, normative, and mimetic. Within the context of ITIL, coercive pressure may be experienced from customers, government agencies, IT service providers, and vendors. Normative pressure may be experienced from the various ITSMF chapters, the numerous ITIL seminars and conferences, the IT press, and from ITIL training and certification bodies. Mimetic pressure may also be evident, as firms may want to imitate industry leaders. It is reasonable to believe that all three types of pressure are effective in this area. Current research does not shed light on whether isomorphic pressure is present or which type of pressures are the strongest. Future research can analyze the underlying reasons why firms adopt ITSM and implement ITIL, based on DiMaggio and Powell's concept of isomorphic pressure. It may also be worth studying whether firms facing coercive pressure work harder to implement ITIL and achieve more benefits than firms facing less external pressure.

From a process perspective, ITIL is regarded as a set of best practices derived from a selection of well-functioning IT organizations. Best practices will help IT functions deliver high-quality IT services and sustain a competitive advantage. However, contingency theory claims that there is no best way of organizing and that an organizational structure – including processes – that is effective in some situations may not be successful in others (Fiedler, 1964). The optimal structure is contingent upon the internal and external situation. An organization's design and processes must fit with the environment, as well as the organization's various subsystems. It may be precarious for an IT function to assume that

simply copying processes from other successful IT functions (as portrayed in ITIL) to their own function will bring the similar benefits. An IT function should rather study its contingencies and appropriately align their processes based on this analysis. Future research can apply contingency theory to investigate the external and internal contingencies embedded in ITIL, and compare these with preconditions present in IT functions implementing ITIL. Such an analysis may point to situations and identify contingency factors under which firms are more likely to succeed with ITIL. Contingency theory suggests an important question: Are the internal and external contingencies universal for all IT functions that might benefit from ITIL best practices?

Critical success factors: Analysis and research opportunities

Critical success factors within the context of this research can be defined as the key areas where “things must go right” in order for the implementation project to achieve a high level of success. This review finds that researchers have extensively discussed the factors that are important for successful ITIL implementation. Overall, two approaches have been used to answer this research question. Case studies have mainly asked what the most important factors are for success when implementing ITIL, and surveys have presented the respondents with predefined alternatives and asked them to rank the relevance of each alternative. The findings from these questions are identified in Section 3.5. This review has not identified any theory used to address this research question, apart from the theory of critical success factors itself.

Does research provide IT managers with valuable and constructive advice in this area? What are implications for practice? Might a particular ITIL implementation project succeed, if it manages to handle the most important factors identified by research? Although existing research points to factors most critical for success, there is little empirical evidence on how to conduct an implementation project successfully, and how to measure the success of an implementation initiative. The set of success factors has not yet been tested and validated. This should be addressed by future research. Figure 1 presents an *a priori* model for ITIL implementation success factors based on our review. It has ten candidate success factors: 1) top management support; 2) a project champion; 3) staff expertise; 4) broad involvement; 5) ongoing information; 6) ITSM-aligned culture; 7) willingness to change; 8) external consultant; 9) ITSM software; and 10) firm size. In order to measure implementation success, two dimensions are selected: a) actual implementation status and b) perceived benefits.

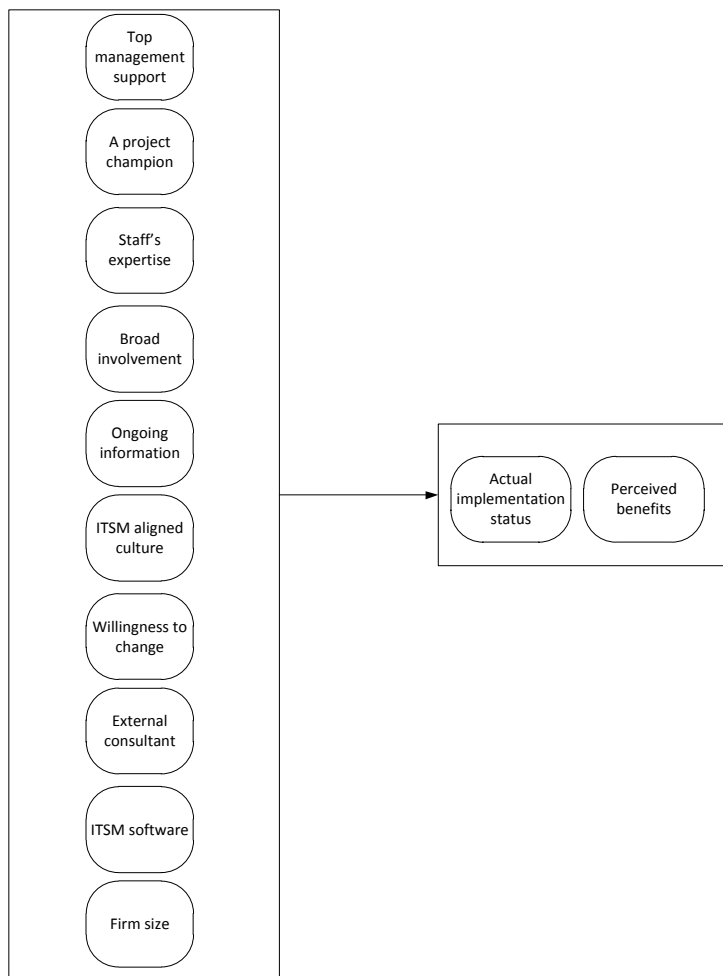


Figure 1: The *a priori* success model for ITIL implementation

ITIL success is difficult to measure, as there is no established evaluation standard. There is no single tangible output from an ITIL implementation project whose value can be measured in isolation. Instead, it is mainly the impact of process improvement activities on organizational performance that is of interest. However, these improvement activities may lead to a variety of benefits, as different processes address different areas and services. These benefits may be difficult to identify, capture, and measure. We will propose two types of dependent variables as candidates for measuring implementation success: the “actual implementation status” of the whole set of ITIL processes, and “perceived benefits” (DeLone & McLean, 2002; Pavlov & Bourne, 2011) from a stakeholders’ perspective. Actual implementation status can be measured by using a 25-item scale representing all the processes in ITIL version 3. The response format can be a five-point ordinal scale: not started (1), early (2), halfway (3), advanced (4), and completed (5). This list of 25 ITIL processes (items) will represent a formative, composite scale, addressing the processes included in each company’s ITIL implementation. Perceived benefits from an ITIL implementation can be measured using a ten-item scale derived from the findings in our review. Key items identified are “improved service quality”, “improved customer satisfaction”, “improved response and resolution time”, “reduced downtime,” “standardized processes,” improved processes,” “reduced IT costs,” “improved IT resource utilization,” “improved business/IT alignment,” and “improved IT governance.” These items may be operationalized, for example, by using a five-point ordinal scale, ranging from “the statement has a

low grade of validity” (1) “to the statement has a high grade of validity” (5). Future research may verify, test, and further develop this model.

Implementation status: Analysis and research opportunities

Overall, existing research studies implementation status on three different levels of analysis: the national level (if and to what extent the population of IT functions in a country is implementing or planning to implement ITIL); the firm level (the overall implementation status in firms); and the process level (the implementation status for each ITIL process in a firm). On the national level, we know that there is a vast interest in ITIL among U.S. firms; 60% of the population was in 2009 either using or planning to use ITIL. A similar interest was found in Brazil, although the number of firms using ITIL was considerably lower than in the US. We also find, as the Austrian study reveals, that there may be significant sector differences regarding adoption; only a small number of the responding hospitals was using or planning to use ITIL. On the firm level, we know that half of those surveyed in a UK and US study assessed their implementation to be either on level 2 (repeated) or level 3 (defined). On the process level, we know that IT functions prioritize the ITIL processes differently; one European firm prioritized the service support processes, while three Nicaraguan firms prioritized the service delivery processes.

There is a need for more research in this area. To date, on the national level, most of the empirical studies of ITIL implementation progress are limited to a few regions and countries, which call for more research in other international settings. What is the implementation status in the different global regions, and are there regional differences? Is ITIL more attractive to firms in some areas than others? If yes, can this be explained, for example by applying theories on cultural differences (Hofstede, 1997)? Regarding research approach, existing surveys on the national level tend to evaluate the spread of ITIL by asking firms if they are using or are planning to use ITIL. Future studies should identify the precise ITIL implementation status by also asking what parts of ITIL firms are using or not using.

On the firm and process levels, more research is needed in order to assess whether firms implement or plan to implement the entire ITIL package, or if they choose a selection of the different processes. What reasons do they give for their choice? In order to assess whether IT service management is a common practice in IT functions, and thus a characteristic of how today’s IT functions are organized, more research is needed on implementation maturity in firms. Many firms claim, for example in the IT press and at itSMF conferences, that they “are using ITIL.” A natural follow-up question would be: How many ITIL processes have you actually implemented, and how many of these processes are mature in your organization? This can lead to a discussion of what operating according to the principles of IT service management entails. The case studies reveal that although progress for most processes in the actual firms was slow, the firms reported they were performing IT service management. Future studies should address what it really means to be using ITIL and operating according to ITSM. Future studies could also address strategies for implementation and companies’ priorities when they are selecting processes for implementation.

Outcomes and benefits: Analysis and research opportunities

Outcomes and benefits within the context of this research can be defined as the ITIL implementation results achieved by the IT function and its customers. Outcome and benefits identified by existing research are presented in Section 3.5.

Outcome and benefits achieved must be interpreted in relation to implementation progress and process prioritization. Different processes and sets of processes lead to different benefits. There is a correlation between processes selected and benefits achieved. An IT department prioritizing service support – for example, the service desk and the change management process – will undoubtedly emphasize effects on customer satisfaction and production stability. On the other hand, a company prioritizing service delivery processes, like the financial- and capacity management processes, will put more emphasis on economic benefits. Consequently, future studies on outputs and benefits should be conducted taking the actual implementation (processes and progress) of the responding firms into consideration.

Additional research opportunities

Future research may also investigate whether IT functions that implement ITIL also employ process management (Hammer, 2010). This is a pertinent issue, as ITIL not only implies a time-limited project for redesigning processes according to best practice; it also implies that processes are managed on a daily basis (Taylor, Case, & Spalding, 2007). In this way ITIL is strongly influenced by quality management and process reengineering (Galup, Quan, Dattero, & Conger, 2007). Without process management, it is not likely that ITIL will succeed beyond its initial implementation. The literature offers various models for process management (Hammer & Stanton, 1999; Rosemann & de Bruin, 2005; Smith & Fingar, 2003). Process awareness, process ownership, process measurement, and continuous process improvement are key dimensions in the literature. In addition, Hammer proposes a model that companies can use to ensure that their processes are maturing, and are capable of delivering higher performance over time (Hammer, 2007). In his model, Hammer distinguishes between two characteristics: process enablers, which pertain to each individual process in a firm, and enterprise capabilities, which apply to the entire organization. Both are crucial for process management. The relationship between ITIL implementation and process management is an area for research. This review has not identified any published literature on this issue. One research opportunity is to study whether there is a correlation between ITIL implementation and process management in the IT function. Does the level of process management increase as the implementation level of ITIL increases?

IT governance is defined as the leadership, structures, processes, and relationships that ensure that the organization's IT sustains and extends the strategy and objectives of the firm (De Haes & Van Grembergen, 2009). ITIL is frequently presented as an enabler for IT governance (Ko & Fink, 2010; Selig, 2008; Van Grembergen & DeHaes, 2008). This review has not identified any contribution that analyzes or assesses how ITIL enables IT governance. This is an opportunity for further investigation. One research question might ask whether there is a correlation between the implementation of ITIL and IT governance; does the level of IT governance increase in firms as the implementation level of ITIL increases? Alignment is another related issue (Chan & Reich, 2007). Alignment has several dimensions. Shared domain knowledge, communication, connected plans, and partnership are found to be particularly important (Iden, Tessem, & Paivarinta, 2012). Three of the contributions identified by this review argue that ITIL increases alignment (J11, J17, and C1). Alignment is, however, a minor issue in these studies, and no theoretical framework or reference theory has been applied, which opens up the possibility for more research on this issue.

Service innovation is another relevant subject. Service innovation is often understood as changes in the services an organization offers, and changes in the ways in which services are created and delivered (de Jong & Vermeulen, 2003). Service and service innovation are central to the idea of ITSM and ITIL.

An IT function delivers IT services to business, and these IT services reflect business' changing needs through constant improvement (Commerce, 2007a). According to our review, this is an area that is less present in ITSM and ITIL research, which opens up the possibility for further research. Relevant research questions relate to how IT and businesses cooperate in service innovation (Iden, et al., 2012), the IT function capabilities necessary for managing service innovation (den Hertog, van der Aa, & de Jong, 2010), which success factors intervene directly with the activities in the service innovation process (Atuahene-Gima, 1996), and how the launching of a new or changed service should be timed (Van Riel, Lemmink, & Ouwersloot, 2004).

5. Conclusion

In this study, we systematically reviewed research articles on the implementation of ITSM and ITIL. We analyzed the contributions with respect to specific research questions. This article contributes to research in several ways. First, it provides a systematic overview of existing research in this area. We have identified 37 significant contributions: 21 journal articles and 16 articles on conference proceedings. The contributions have been systematically categorized, which provides the current status of this emergent research field and will ease researchers' search for relevant studies. Second, through a thorough analysis, we have proposed potential areas and approaches for future studies. The review concludes that the motives for implementation, critical factors for implementation success, implementation status, and the outcomes and benefits of implementation are the most dominant topics in current research. The review shows that there is only limited research on implementation strategies, methods, performance measurement, alignment, and IT governance, which suggests the need for future research on these issues. We encourage researchers to join this current research area.

This study also contributes to practice, and IT managers would benefit from our review. The summaries of the various issues may serve as guidelines for IT managers who are planning to adopt or already are adopting ITSM and implementing ITIL. Our catalogue of critical success factors and the proposed *a priori* model may be especially significant. In addition to organizing their initiatives well, IT managers should also plan ahead to realize the benefits from their efforts; this may be facilitated by the outcomes and benefits summarized by this review.

The review and the search process are based on methodological recommendations prescribed in the literature (B. Kitchenham, 2004; Okoli & Schabram, 2010; Webster & Watson, 2002), which makes us confident that our review is thoroughly conducted. However, the selection of key words, sources, inclusion and exclusion criteria, and time frame is based on our own judgment, and our choice has limitations. We could have added more key words for our search; for example, each of the various ITIL processes and the more technical elements that are parts of ITSM and ITIL (e.g. IT service, service level agreement and ITSM software). Such a search strategy would, however, be very extensive, and we are fairly confident that we have been able to identify the relevant contributions.

Appendix

Table 7: Articles reviewed by this research

Article ID	Article
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J1	Nabiollahi, A., Alias, R. A., & Sahibuddin, S. (2011). Involvement of Service Knowledge Management System in Integration of ITIL V3 and Enterprise Architecture. <i>American Journal of Economics & Business Administration</i> , 3(1), 165-170.
J2	Hoerbst, A., Hackl, W. O., Blomer, R., & Ammenwerth, E. (2011). The status of IT service management in health care – ITIL (R) in selected European countries. <i>BMC Medical Informatics and Decision Making</i> , 11 (76), 2-12.
J3	Marrone, M., & Kolbe, L. M. (2011). Impact of IT Service Management Frameworks on the IT Organization. <i>Business & Information Systems Engineering</i> , 3(1), 5-18
J4	Wan, S. H. C., & Chan, Y. H. (2008). Improving service management in campus IT operations. <i>Campus-Wide Information Systems</i> , 25(1), 30-49.
J5	Lapão, L. V. (2011). Organizational Challenges and Barriers to Implementing IT Governance in a Hospital. [Article]. <i>Electronic Journal of Information Systems Evaluation</i> , 14(1), 37-45.
J6	Neničková, H. (2011). Critical success factors for ITIL best practice usage. <i>Economics and Management</i> , 16, 839-844.
J7	McNaughton, B., P. Ray, L. Lewis. (2010). Designing an evaluation framework for IT service management. <i>Information & Management</i> , 47(4), 219-225.
J8	Kumbakara, N. (2008). Managed IT services: the role of IT standards. <i>Information Management & Computer Security</i> , 16(4), 336-359.
J9	Marrone, M., L. Kolbe. (2010). Uncovering ITIL claims: IT executives' perception on benefits and Business-IT alignment. <i>Information Systems and E-Business Management</i> , 9(3), 363-380.
J10	Mesquida, A. L., Mas, A., Amengual, E., & Calvo-Manzano, J. A. (2012). IT Service Management Process Improvement based on ISO/IEC 15504: A systematic review. <i>Information and Software Technology</i> , 54(3), 239-247
J11	Pollard, C., & Cater-Steel, A. (2009). Justifications, Strategies, and Critical Success Factors in Successful ITIL Implementations in U.S. and Australian Companies: An Exploratory Study. <i>Information Systems Management</i> , 26(2), 164-175.
J12	Winniford, M., S. Conger, L. Erickson-Harris. (2009). Confusion in the Ranks: IT Service Management Practice and Terminology. <i>Information Systems Management</i> , 26(2), 153-163.
J13	Galup, S.D., R. Dattero. (2010). A Five-Step Method to Tune Your ITSM Processes. <i>Information Systems Management</i> , 27(2), 156-167.
J14	Iden, J., L. Langeland. (2010). Setting the Stage for a Successful ITIL Adoption: A Delphi Study of IT Experts in the Norwegian Armed Forces. <i>Information Systems Management</i> , 27(2), 103-112.
J15	Kanapathy, K., & Khan, K. I. (2012). Assessing the Relationship between ITIL Implementation Progress and Firm Size: Evidence from Malaysia. <i>International Journal of Business & Management</i> , 7(2), 194-199.
J16	McBride, N. (2009). Exploring service issues within the IT organisation: Four mini-case studies. <i>International Journal of Information Management</i> , 29(3) 237-243.
J17	Cater-Steel, A. 2009. IT service departments struggle to adopt a service-oriented philosophy. <i>International journal of information systems in the service sector</i> , 1(2), 69-77.
J18	Tan, W. G., A. Cater-Steel, M. Toleman. (2009). Implementing IT service management: A case study focusing on critical success factors. <i>Journal of Computer Information Systems</i> , 50(2), 1-12.
J19	Gacenga, F., Cater-Steel, A., & Toleman, M. (2010). An International Analysis of IT Service Management Benefits and Performance Measurement. <i>Journal of Global Information Technology Management</i> , 13(4), 28-63.
J20	Wan, J., & Wan, D. (2011). Analysis of the Mindbugs in Information Technology Service Management Project Implementation. <i>Technology and Investment</i> , 2, 184-192.
J21	Kashanchi, R. & Toland, J. (2006). Can ITIL contribute to IT/business alignment? An initial investigation. <i>Wirtschaftsinformatik</i> , 48(5), 340-348.
C1	Mohammed, T. (2008, December 14-17). <i>The Art of Existence and the Regimes of IS-enabled Customer Service Rationalization: A Study of IT Service Management in the UK Higher Education</i> . Paper presented at the International Conference on Information Systems, Paris, France.
C2	Gacenga, F., Cater-Steel, A., Tan, W. G., & Toleman, M. (2011, December 4-7). <i>IT Service Management: Towards a Contingency Theory of Performance Measurement</i> . Paper presented at the International Conference on Information Systems, Shanghai.

C3	Conger, S., Winniford, M., & Erickson-Harris, L. (2008, August 14-17). <i>Service Management in Operations</i> . Paper presented at the Fourteenth Americas Conference on Information Systems, Toronto, ON, Canada.
C4	Duffy, K. P., & Denison, B. B. (2008, August 14-17). <i>Using ITIL to Improve IT Services</i> . Paper presented at the Fourteenth Americas Conference on Information Systems, Toronto, ON, Canada.
C5	Coelho, A. M., & Rupino da Cunha, P. (2009, August 6-9). <i>IT Service Management Diagnosis at Grefusa Group and ITIL Implementation Proposal</i> . Paper presented at the Fifteenth Americas Conference on Information Systems, AMCIS, San Francisco, California.
C6	Flores, J., Rusu, L., & Johanneson, P. (2010, August 12-15). <i>Evaluating IT Service Delivery amongst ISPs from Nicaragua</i> . Paper presented at the Sixteenth Americas Conference on Information Systems, AMCIS, Lima, Peru.
C7	Zajac, A., & Soja, P. (2012, August 9–12). <i>ITSM Adoption in European SMEs: Transition versus Developed Economies</i> . Paper presented at the AMCIS Americas Conference on Information Systems, Seattle, WA.
C8	Hochstein, A., Tamm, G., & Brenner, W. (2005, May 26-28). <i>Service-Oriented IT Management: Benefit, Cost and Success Factors</i> . Paper presented at the 13 th European Conference on Information Systems, Regensburg, Germany.
C9	Cater-Steel, A., Tan, W. G., & Toleman, M. (2006, June 12-14). <i>Challenge of adopting multiple process improvement frameworks</i> . Paper presented at the 14th European Conference on Information Systems, Gothenburg, Sweden.
C10	Cater-Steel, A., & McBride, N. (2007). <i>IT service management improvement – actor network perspective</i> . Paper presented at the 15th European Conference on Information Systems, St. Gallen, Switzerland.
C11	Muhren, W. J., Van Den Ede, G., & Van de Walle, B. (2007, June 7-9). <i>Organizational Learning for the Incident Management Process: Lessons from High Reliability Organizations</i> . Paper presented at the 15th European Conference on Information Systems, St. Gallen, Switzerland.
C12	Disterer, G. (2012, June 11-13). <i>Why firms seek ISO 20000 certification – A study of ISO 20000 adoption</i> . Paper presented at the 20th European Conference on Information Systems, Barcelona, Spain.
C13	Arora, A., & Bandara, W. (2006, July 6-9). <i>IT Service Desk Process Improvement – A Narrative Style Case Study</i> . Paper presented at the Pacific Asia Conference on Information Systems, Kuala Lumpur, Malaysia.
C14	Wagner, H.-T. (2006, January 4-7). <i>Managing the impact of IT on firm success: The link between the Resource-based view and the IT Infrastructure Library</i> . Paper presented at the Hawaii International Conference on System Sciences, Kauai, Hawaii.
C15	Jin, K., & Ray, P. (2008, January 7-10). <i>Business-oriented development methodology for IT service management</i> . Paper presented at the Hawaii International Conference on System Sciences, Waikoloa, Big Island, Hawaii.
C16	de Espindola, R. S., Luciano, E. M., & Audy, J. L. N. (2009, January 5-8). <i>An overview of the adoption of IT Governance models and software process quality instruments at Brazil: preliminary results of a survey</i> . Paper presented at the Hawaii International Conference on System Sciences, Waikoloa, Big Island, Hawaii.

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