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RE-CONCEPTUALISING IS FUNCTION'S SUPPORT PERFORMANCE: A PRELIMINARY MODEL

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Abstract

While IS function has gained widespread attention for over two decades, there is little consensus among information systems (IS) researchers and practitioners on how best to evaluate IS function's support performance. This paper reports on preliminary findings of a larger research effort proceeds from a central interest in the importance of evaluating IS function's support in organisations. This study is the first that attempts to re-conceptualise and conceive evaluate IS function's support as a multi-dimensional formative construct. We argue that a holistic measure for evaluating evaluate IS function's support should consist of dimensions that together assess the variety of the support functions and the quality of the support services provided to end-users. Thus, the proposed model consists of two halves, 'Variety' and 'Quality' within which resides seven dimensions. The Variety half includes five dimensions: Training; Documentation; Data-related Support, Software-related Support; and Hardware-related Support. The Quality half includes two dimensions: IS Support Staff and Support Services Performance. The proposed model is derived using a directed content analysis of 83 studies; from top IS outlets, employing the characteristics of the analytic theory and consistent with formative construct development procedures.

Keywords: IS Function's Support, End-Users Support, Analytic Theory, Formative Construct.

1   INTRODUCTION

Organisations continue to increase spending on information systems (IS) and IS budgets continue to rise (Gartner, 2010). However, organisations often do not experience the performance gains they expect from their IS investments (Bergersen, 2004; Seddon, Calvert, & Yang, In Press); the benefits realised from these investments being much influenced by the support given to ensure effective use of the system and satisfied users (Shaw, DeLone, & Niederman, 2002; Shaw, Lee-Partidge, & Ang, 2003; Wixom & Todd, 2005). Notably, various research studies have shown that end-user satisfaction, a common measure used to evaluate the success of a system, is considerably enhanced by providing end-users with appropriate levels of support (e.g. Myers, Kappelman, & Prybutok, 1998; Palvia, 1996; Rainer & Carr, 1992; Shaw et al., 2002; Wixom & Todd, 2005; Yaverbaum & Nosek, 1992).

Assessing IS function's support performance has long been an important issue to IS executives (Carlson & McNurlin, 1992; Chang & King, 2005; Saunders & Jones, 1992). The attention given to the IS function's support performance is evident from the prominence of this issue in various IS studies (e.g. Chang & King, 2005; Munkvold, 2003; Pitt, Watson, & Kavan, 1997; Saunders & Jones, 1992; Shaw et al., 2002; Velsen, Steehouder, & Jong, 2007). Evidence suggests that poor support performance of the IS function is a serious inhibitor to good business performance (Carlson & McNurlin, 1992; Chang & King, 2005). It is believed, though, that *"the IS function is an integral part of achieving organizational success"* (Chang & King, 2005: 86). While IS function is a mature concept and has received considerable attention for over two decades, the question of how best to measure the performance of the support provided to end-users by the IS function remains a vexing management challenge (Shaw et al., 2002; Chang & King, 2005). No commonly accepted measure of the support of the IS function has appeared (Carlson & McNurlin, 1992; Chang & King, 2005; Saunders & Jones, 1992).

This paper focuses on support, specifically, the support provided to end-users by the IS function. This study is the first that attempts to reconceptualise and conceive the support of the IS function as *"a multi-dimensional formative construct"*. This paper reports on preliminary findings of a larger research effort proceeds from a central interest in the importance of evaluating IS function's support performance. The study aims to address the main research question: *"How can the IS function's support performance be effectively and efficiently measured?"*

The remainder of the paper will first present a brief literature review of prior research on IS functions' support evaluations followed by the authors' concerns surrounding published prior studies. Next, the research approach and methodology are presented; introducing the conceptual model and the study design. Section five presents the content analysis; and is divided into three subsequent sections that demonstrate: the aspects of the analytic theory employed in this study, the deriving of the a-priori model, and the constitution of the pool of items for the proposed model. Finally, the paper concludes with a summary and a research outlook.

2   PRIOR RESEARCH ON IS FUNCTION'S SUPPORT EVALUATIONS

While prior literature offered several avenues to measure IS function's support, IS researchers have very often focused on only a specific aspect or a specific measure of IS function's support. IS function's support studies identified and used both subjective and objective measures of support, have employed many methodologies such as case studies and surveys, and varied greatly in terms of research scope, perspective, paradigm, assessment level, and context. Resultantly, there is little research documented that encompasses all appropriate and significant set of IS function's support measures.

To gauge the products and services of the IS function, User Information Satisfaction (UIS), has been frequently employed (Iivari, 1987; Ives, Olson, & Baroudi, 1983; Joshi, 1990). This instrument has been the focus of a series of studies (Bailey & Pearson, 1983; Ives et al., 1983) which identified its

major dimensions as: (1) the quality of information products produced by the IS function; (2) the level of user's knowledge and involvement in system development and IS function activities; and, (3) user attitudes towards IS function staff and services. While versions of the user satisfaction with the IS function (USISF) instruments have been widely used, research has found problems with these measures and have suggested improvements (Galletta & Lederer, 1989; Iivari, 1987; Joshi, 1990; Melone, 1990; Srinivasan, 1985). For example, Baroudi and Orlikowski (1988) state that the original development and subsequent refinement of the USISF measure tended to be in an era of a large centralised transaction processing systems rather than today's personal computing and network-based service environment. Zmud (1984) notes that the role of the IS function has changed significantly from principally a manufacturing activity, involving development and operation of large scale hardware and software systems, to include additional roles of distribution and technology transfer that require higher levels of user interaction and service delivery. Given the changed role of the IS function, researchers have suggested that the USISF instruments' operationalisation may need to incorporate more items and cover additional dimensions to provide richer information (Baroudi & Orlikowski, 1988; Galletta & Lederer, 1989; Joshi, 1990; Melone, 1990).

Saunders and Jones (1992) developed the *"IS Function Performance Evaluation Model"* which was used to describe how measures should be selected from multiple dimensions of the IS function relative to specific organisational factors and based on the perspective of the evaluator. The authors reported a Delphi study followed by senior executive interviews aimed at determining the important dimensions and their measures for evaluating IS function performance. Yet, their proposed model had the following issues: (1) the model focused on top management's perspective of IS function performance, (2) they offered very limited and inadequate list of suggested measures for each dimension, and (3) their study sample was relatively small and was taken from firms in only three selected cities in Texas which leads to question the generalisability of the results. Based on a theoretical input-output model of the IS function's role in supporting business process effectiveness and organisational performance, Chang & King (2005) developed a functional scorecard to measure 'IS Performance'. The instrument consists of 18 uni-dimensional factors (measures) within the three model dimensions: systems performance, information effectiveness, and service performance. Generated items were refined through 2 round Q-sort technique described by Moore & Benbasat (1991). However, the authors cautioned the use of the instrument until it is revalidated, as the sample size was relatively small. On the other hand, some items, such as: "IS training" and "flexibility of services", were borderline with respect to reliability. The authors stressed the need for further studies to explore and improve these items.

Several researhcers researchers (e.g. Jiang, Klein, & Carr, 2002; Kettinger & Lee, 1994, 2005; Shaw et al., 2002; Watson, Pitt, & Kavan, 1998) recognised the importance of the services provided by the IS function and adapted the service quality (SERVQUAL) measure, originally developed in marketing (Parasuraman, Berry, & Zeithaml, 1991), to measure the quality of the services provided by the IS function. Shaw et al. (2002), for example, examined support factors across multiple user groups. Using the SERVQUAL instrument, they looked at the gap between support level expected and support level provided for each of the support factors examined and for each of the user groups. Their results showed larger gaps in IS staff response time, staff technical competence, software upgrades, ease of access to computing facilities, documentation to support training, cost effectiveness of systems, users understanding of the system, and data security and privacy. These eight support factors are a summary of all the user groups, and the gaps between expected support level and perceived support level were negatively associated with overall user satisfaction. Shaw et al. had a generally dissatisfied user population and concluded that future studies should test the robustness of their results with a more highly satisfied user group.

In summary, the scope, perspectives and approach of IS function's support studies, have varied. Though the development of different perspectives on IS function's support has been an important contribution, existing discussions on this issue are scattered, limited to a single perspective, cannot be aggregated in any comprehensiveness way, and lack a common theme.

3 ISSUES WITH PRIOR RESEARCH ON IS FUNCTION'S SUPPORT

We have identified a number of issues associated with prior research examining IS function's support. These include:

- *Choice of Dimensions and Measures:* DeLone & McLean (1992) suggest that in order to develop a comprehensive measurement model and instrument for a particular context, the dimensions and measures should be systematically selected considering contextual contingencies, such as organisation size or structure, or the technology and the individual characteristics of the system. On the other hand, Burton-Jones and Straub, (2006) introduced a two-step approach for selecting measures for a study. They emphasise the importance of considering the 'structure' and 'function' of measures, where structure refers to the selection of elements (dimensions) that are most relevant for the research model and context; and function refers to the selection of measures for the chosen elements that tie the constructs into a nomological network. However, most prior IS function's support studies did not addressed these issues, nor elaborate the rationale for their choice of IS function's support dimensions and measures employed.

- *Theoretical Basis:* Considering the IS function as a service and applying the principles of service quality can yield many opportunities to show the value of the IS function to the organisation. But, measuring service quality is difficult and often ambiguous (Cheng & Ngai, 1994); moreover, the use of SERVQUAL instrument, for example, have been the subject of considerable debate (Kettinger & Lee, 1994; Parasuraman, Zeithaml, & Berry, 1993; Pitt et al., 1997; Van Dyke, Kappelman, & Prybutok, 1997; VanDyke, Prybutok, & Kappelman, 1999). The focus of the debate concerns calculating differences between two possibly different constructs, expectations and perceptions. This lack of theoretical grounding raises concerns about the validity of the instrument. In addition, while service quality measures are important for assessing the IS function, using them alone in an assessment procedure will not provide a thorough understanding of the total contribution of the IS function to the organisation.

- *Construct Validity (Formative vs. Reflective):* Prior research examining IS function's support has not carefully addressed the nature of the support construct as either formative or reflective. Recent work by Petter, Straub, & Rai (2007) has cast doubt on the validity of many mainstream constructs employed in IS research over the past three decades; critiquing the almost universal conceptualisation and validation of these constructs as reflective when in many studies the measures appear to have been implicitly operationalised as formative. Reflective constructs have observed measures that are affected by an underlying latent, unobservable construct (MacCallum and Browne 1993), while formative constructs are a composite of multiple measures. Petter et al. (2007) suggests that there is a significant threat of mis-specifying and validating constructs as "reflective" (MacCallum & Browne, 1993) that on closer scrutiny are in fact "formative". Mis-specification of constructs as formative or reflective results in measurement error; which impacts the structural model, thereby increasing the potential for type I and type II errors (Gable et al., 2008: 379).

- *Different End-Users:* With the exception of few past studies concerned with IS function's support (e.g. Shaw et al., 2002), much prior research has treated users as a single homogenous group. It is, however, likely that any large organisation will have a range of users, from different employment cohorts, for whom different support will have varied levels of salience. In fact, it has been theorised that diversity among end-users calls for *"strongly differentiated education, training, and support for the quite different classes of users"* (Rockart & Flannery, 1983: 778). Thus, different end-users may result into different support needs.

The proposed model of this study intended to address the previously mentioned issues by: (1) following the guidelines of Burton-Jones & Straub (2006) for operationalising dimensions and identifying measures; (2) following the guidelines suggested by Gable et al., (2008) to provide the theoretical rigor in developing the measurement model; (3) the gathered dimensions and measures will be assessed against the characteristics of *Analytic Theory* proposed by (Gregor, 2006); and (4)

capturing multiple end-users perceptions, from different employment cohorts, of IS function's support.

4 APPROACH AND METHODOLOGY

4.1 The Conceptual Model

This study proceeds from the assumption that the IS function's support is multi-dimensional construct. Consistent with Rivard (1987), Bergeron et al. (1990), Mirani & King (1994a, 1994b), Bergeron et al. (1995); Au et al. (2002), and Chang & King (2005) 'description/notation of support', we thus argue that *"a holistic measure for evaluating IS function's support should consist of dimensions that together assess the variety of the support needs and the quality of the support services provided to end-users"*. Figure 1 depicts the IS function's support conceptual model. The model consists of two halves; Variety and Quality. While the 'Variety' half is related to the *various 'support needs' needed by end-users*, the 'Quality' half is related to the '*IS support staff*, and *the 'performance of the support services' provided by the IS support staff to end-users*.
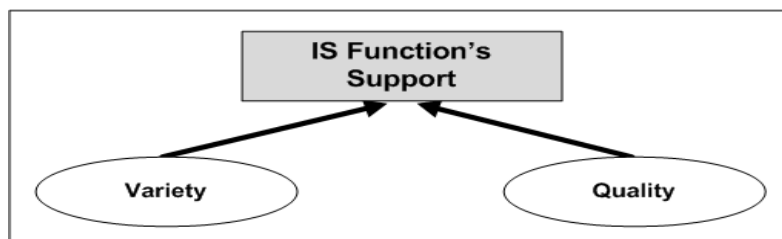

Figure 1.   Conceptual Model

Thus, we define IS function's support as *"a multi-dimensional formative construct, of the variety of the support needs and the quality of the support services, at a given point in time, as perceived by end-users"*.

4.2 The Study Design

In the interest of achieving the abovementioned study objective, the study employs a longitudinal, multi-method research design, extending the research cycle proposed by MacKenzie & House (1979) and McGrath (1979) for developing and validating a measurement model. The research design, depicted in Figure 2, entails two main phases, within which resides two surveys: (1) an exploratory-phase, to develop the hypothesised measurement model, and (2) a confirmatory-phase, to test the hypothesised measurement model against new data gathered.

The exploratory phase adheres with the two-step approach of (Burton-Jones & Straub, 2006) for operationalising dimensions and identifying measures. It aims to: (1) adequately account for the context of IS function's support, (2) ensure model completeness, and (3) ensure that an appropriate and complete choice of measures and dimensions are considered. The exploratory phase consists of a three-phase approach, a content analysis, and a case study followed by a specification survey (the 1st survey).

The content analysis (Section A of the overall research design and the main focus of this paper), akin to the 'function' phase of the Burton-Jones & Straub (2006) approach, is intended to identify the salient dimensions and measures for the proposed model. Herein, the study attempts to identify dimensions and measures from the existing IS function's support literature, based on conceptual arguments. Deriving dimensions and measures from a thorough literature review for the a-priori model ensures: (1) the referent dimensions and measures are not only conceptually, but also (2) empirically relevant in the IS function's support context.
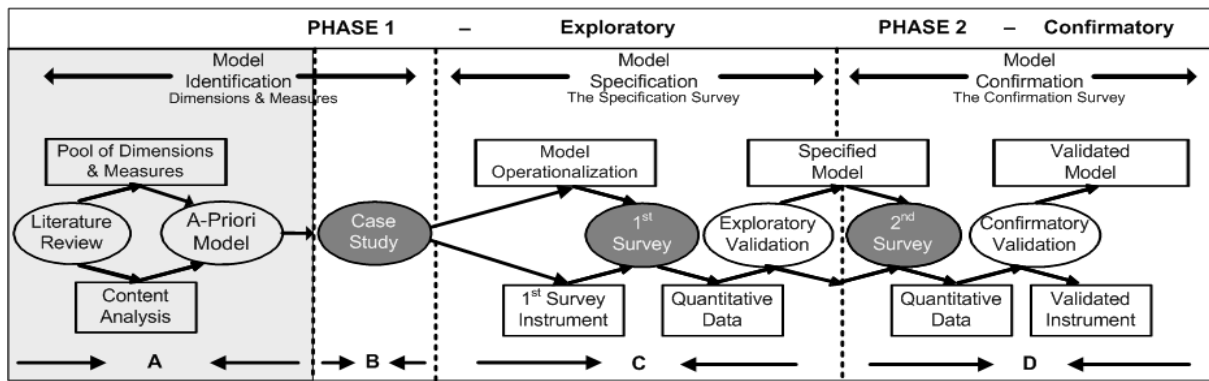
Figure 2.   Overall Research Design

<u>The Case Study</u> aims to develop a grounded understanding of IS function's support and investigate the applicability and the completeness of the dimensions and measures identified from the content analysis. The dimensions and measures (that were identified in the content analysis and investigated in the case study) will later be operationalised in the specification-survey. *<u>The Specification-survey (the 1st survey)</u>* aims to further specify and test the a-priori model. The dimensions and measures resulting from the content analysis and the case study will be operationalised to create a measurement instrument where data will be gathered (primarily through 7-point Likert scales using the identified measures). In order to establish internal validity for a *"formative index"*, we will follow guidelines by Gable et al. (2008), Gable & Sedera (2009), and Cenfetelli & Bassellier (2009). We will also follow Jarvis et al.'s (2003) procedures for achieving identification of formative indicators. *<u>The Confirmation-survey (the 2nd survey)</u>* aims to further validate the IS function's support model and instrument resulting from the exploratory-phase, and to further illustrate the mutual exclusivity and additivity of the dimensions and measures in the model using confirmatory data analysis techniques and new data. To complete the research cycle proposed by Mackenzie *et al.* (1979), construct validation tests similar to the Specification-Survey will be conducted on the Confirmation-Survey data.

5   CONTENT ANALYSIS

Content analysis is a widely used qualitative research technique and has been defined as a systematic, replicable technique for compressing many words of text into fewer content categories based on explicit rules of coding (Harwood & Garry, 2003; Stemler, 2001; Weber, 1990). Content analysis has three distinct approaches: conventional, directed, or summative (Hsieh & Shannon, 2005). Conventional content analysis, also described as inductive category development, is generally used with a study design whose aim is to describe a phenomenon. This type of design is usually appropriate when existing theory or research literature on a phenomenon is limited. Directed content analysis, as a deductive category application, is often used when existing theory or prior research exists about a phenomenon that is incomplete or would benefit from further description. The goal of directed content analysis is to validate or extend conceptually a theoretical framework, model or theory. Summative content analysis starts with indentifying and quantifying certain words or content in text with the purpose of understanding the contextual use of the words or content. This quantification is an attempt to infer meaning rather than to explore usage, so it goes beyond mere word counts to include latent content analysis. We employ the *Directed Content Analysis* in this paper.

In order to contain the study effort, the input for the content analysis was constrained to: (1) the period 1990-2009, and top-tier outlets[1], (2) specific domains including: (a) End-user computing (EUC)

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[1] The search captured core IS outlets which included sources from top-tier IS journals, proceeding from major IS conferences, and other recognised sources that seemingly published about end-users support (identified after a preliminary database analysis), examples include, but not limited to: MIS Quarterly, Information Systems Research, Management Science, Journal of MIS, Journal of the AIS, Decision Sciences, and Information & Management.

support, (b) User Information Satisfaction (UIS), (c) IS function's support performance, and (d) IS service quality. A total of 83 studies were included in this content analysis upon extraction (using text search for a string of words related to the topic domain) from the selected pool of sources.

The following sections discuss the analytic theory aspects of the proposed IS function's support model, deriving the a-priori IS function's support model, and the constitution of the pool of measures for the proposed model.

5.1 Analytic Theory Aspects of the Proposed IS Function's Support Model

Analytic (or Type 1) theory, the most basic type of theory, is necessary for the development of all of the other types of theory Gregor (2006). In Building a classification model, framework, or a taxonomy, the analytic theory is an important initial step towards building a theory and to derive a deeper understanding of a phenomena of interest. *"They describe or classify specific dimensions or characteristics of individuals, groups, situations, or events by summarizing the commonalities found in discrete observations"* (Gregor, 2006: 623). Analytic theory seeks to answer "What is" question as opposed to explaining causality or attempting predictive generalisations is the essence of the approach (Gregor, 2006).

Hence, akin to analytic theory (Gregor, 2006), IS function's support is conceptualised as a formative, multidimensional construct, wherein the dimensions form the overarching construct – IS function's support. Good analytic theory should manifest strong positive qualities of: (1) model completeness – include all relevant dimensions and measures, where any ill-conceived additions or omissions good and bad, high and low, positive and negative may critically mask, neutralise or distort results, (2) model parsimony – where only the simplest and smallest relevant dimensions and measures are included, and (3) mutual exclusivity - where each measure addresses a unique aspect of the construct without having overlapping measures. Thus we evaluate IS function's support in terms of these qualities.

5.2 Deriving the A-Priori IS Function's Support Model

The literature suggests two main approaches in developing an a-priori model: (1) a 'bottom-up', data driven, open coding approach, or (2) a 'top-down', structured coding, framework approach. The bottom-up approach employs induction, starting with the data in hand, that is arranged into a logical classification, while the top-down approach employs deduction, and starts with a logical framework or model to categorise the responses. Given the relative advantages and disadvantages of these approaches and consistent with the 'directed' approach of the content analysis, it was decided that the 'top-down' to be employed in this study.

A thorough literature review was conducted to identify all candidate dimensions and measures concerned with: (1) the support needed by end-users, (2) the IS support staff, and (3) the performance of the support services provided by the IS support staff to end-users. Two comprehensive lists were thus extracted. While one list consists of a total of 67 dimensions (including redundant dimensions), the other list contains 214 measures (including redundant measures).
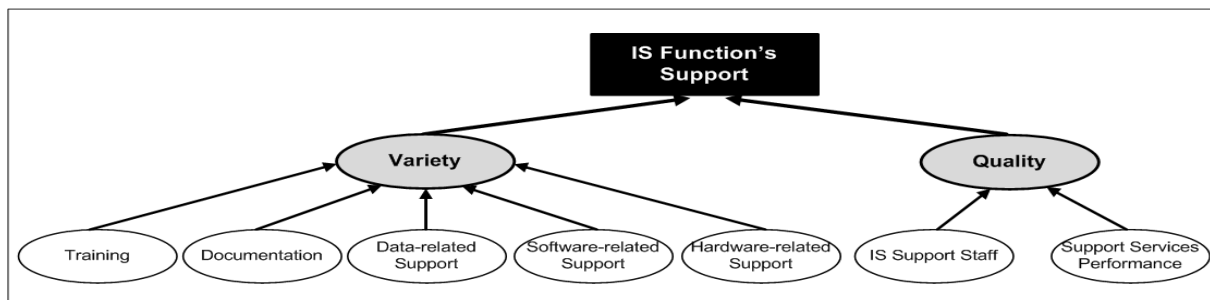

Figure 3.   The IS Function's Support A-Priori Model.

In the interest of achieving the abovementioned qualities of the Analytic Theory (Gregor, 2006), and consistent with formative index development procedures (Diamantopoulos & Winklhofer, 2001) the derived dimension list (the 67 dimensions including redundancy) was then carefully analysed to eradicate redundancies and to ensure the completeness and parsimony of the dimensions. Figure 3 depicts the resultant IS function's support a-priori model.

As depicted in Figure 3, the proposed model consists of two halves, 'Variety' and 'Quality' within which resides seven dimensions. The Variety half includes five dimensions: *Training; Documentation; Data-related Support, Software-related Support*; *Hardware-related Support,* and the Quality half includes two dimensions: *IS Support Staff and Support Services Performance*. The model does not purport (is not concerned with) any causality among the model dimensions; rather, akin to analytic theory (Gregor, 2006), the dimensions are posited to be formative dimensions of the multi-dimensional construct – IS function's support, wherein the dimensions form the overarching construct-IS function's support. Table 1 defines the dimensions of the IS function's support a-priori model.

The Dimensions of the IS Function's Support A-Priori Model	
The Variety Half	*Related to the various support needed by end-users*
Training	The amount and the adecuacy of specialised instructions and practice that is provided to end-users to increase their capabilities in utilising the system.
Documentation	The recorded description of an information system. This includes formal instructions for the use of the system.
Data-related Support	The extent to which end-users have received the required support regarding data-related issues (e.g. data backup/recovery)
Software- related Support	The extent to which end-users have received the required support regarding software-related issues (e.g. maintenance and upgrades)
Hardware- related Support	The extent to which end-users have received the required support regarding hardware-related issues (e.g. installation, configuration)
The Quality Half	*Related to the IS support staff and the quality of the support services*
IS Support Staff	End-users attitudes towards the IS support staff (e.g. availability, attitude, competency)
Support Services Performance	End-users attitudes towards the performance of the support services provided by the IS support staff to (e.g. completeness, reliability)

Table 1.   Defining the IS function's Support A-Priori Model Dimensions

5.3   Constitution of the Pool of Measures for the A-Priori IS Function's Support Model

A good formative index is one that exhausts the entire domain of the construct completely, meaning that the items should collectively represent all the relevant aspects of the construct of interest (Bagozzi & Fornell, 1982; Gable & Sedera, 2009; Gable, Sedera, & Chan, 2008). Hence, the derived measures list (the 214 measures including redundancy) was carefully synthesised. The synthesisation process was conducted consistent with: (1) formative index development procedures (Diamantopoulos & Winklhofer, 2001), (2) the qualities of the Analytic Theory (Gregor, 2006), and (3) following five simple guidelines adopted from Gable et al. (2008). The synthesisation process was not only (1) to eradicate redundant measures, but also (2) to ensure the mutually exclusive, (3) completeness, and (4) the parsimony of the measures. The guidelines followed were:

- Where a measure was not relevant to the topic domain, it was eliminated,
- Where measures are the same (identical), they were combined into a single measure,
- Where measures use similar words, but expressed in a different way, they were combined into a single measure,
- Where measures use different words, but have similar meanings, a list of synonyms was considered using a thesaurus, those measures were combined into single measures, and
- Where measures were noted to always occur in combination, in the interests of parsimony, those measures were combined into single measures.

The synthesis process identified 25 unique measures of the proposed IS function's support model. Table 2 provides evidence of the synthesisation effort. It also includes some examples of citations, reported in the reviewed literature, for each measure.

The Measures of the IS Function's Support A-Priori Model		
	Measures	**Example of citations**
Training	Amount of training provided	Karimi et al. (2004)
	Adequacy of training provided	Karimi et al. (2004)
Documentation	Usefulness of user manuals	Etezadi-Amoli et al. (1996)
	Usefulness of the index of the user manual.	Etezadi-Amoli et al. (1996)
	Completeness of user manuals	Etezadi-Amoli et al. (1996)
	Currency of user manuals	Etezadi-Amoli et al. (1996)
	Ease of understanding the user manual	Etezadi-Amoli et al. (1996)
Data-related Support	Backup/recovery assistance	Mirani & King (1994a, 1994b).
	Assistance in accessing the data	Karimi et al. (2004)
	Assistance in finding and using the data	Karimi et al. (2004)
Software-related Support	Maintenance and upgrade	Mirani & King (1994a, 1994b); Shaw et al. (2002).
	Problem identification assistance	Chau (1997)
	Problem solving assistance	Mirani & King (1994a).
Hardware-related Support	Installation	Igbaria & Guimaraes (1993); Chau (1997).
	Configuration	Mirani & King (1994b); Chau (1997).
	Maintenance and upgrade	Chau (1997); Mirani & King (1994a).
Support Services Performance	Response time for a service request	Wixom & Todd (2005); Kettinger & Lee (2005).
	Time required for service completion	Chang & King (2005); Kettinger & Lee (2005).
	Reliability of the service	Jiang et al. (2002); Pitt et al.(1997).
	Completeness of the service	Shaw et al. (2002); Kettinger & Lee (2005).
IS Support Staff	Sufficient support staff	Chang & King (2005); Nilsen & Sein (2002).
	Specialisation of IS function staff	Yoon & Guimaraes (1995); Toon et al. (1995).
	Attitude of the IS function staff	Kettinger & Lee (2005); Petter et al. (2008).
	Availability of support staff for consultation	Kettinger & Lee (2005); Shaw et al. (2002).
	Communication links with the support staff	Pitt et al.(1997); Kettinger & Lee (2005).

Table 2.   Specifying the IS function's Support A-Priori Model Measures.

6   SUMMARY AND RESEARCH OUTLOOK

The overall study is novel in aiming to contribute to the goal of developing a robust model, instrument, and approach for measuring IS function's support in a holistic way. The model is intended to include the characteristics of analytic theory and the development procedures of a formative index. This study is the first that attempts to reconceptualise and conceive the IS function's support as multi-dimensional formative construct.

In a study design with two interrelated phases – exploratory and confirmatory, this paper reports on the findings of the exploratory first stage, where the purpose was to expose the underlying measures and dimensions, of IS function's support, concerned with: the support services needed by end-users, the IS support staff, and the performance of the support services provided by the IS support staff to end-users. Consequently, two comprehensive lists were thus extracted. While one list consists of a total of 67 dimensions, the other list contains 214 measures. In the interest of achieving the qualities

of the Analytic Theory, consistent with formative index development procedures, and following five simple guidelines proposed by Gable et al the two lists were carefully analysed. The 67 dimensions were analysed to eradicate redundancies and to ensure the completeness and parsimony of the dimensions. Consistent with the conceptual model of the study, the proposed model consists of two halves, 'Variety' and 'Quality' within which resides seven dimensions. The Variety half includes five dimensions: *Training; Documentation; Data-related Support, Software-related Support*; *Hardware-related Support,* the Quality half includes two dimensions: *IS Support Staff and Support Services Performance*. On the other hand, the 214 measures were also synthesised into 25 mutually exclusive measures.

As shown in the study design (see Figure 2), the study will be extended through a series of planned techniques to overcome any limitation. The dimensions and measures identified herein will be further tested using a Case Study that aims to develop a grounded understanding of IS function's support and investigate the applicability and the completeness of the dimensions and measures. The specification survey (1st survey) will be designed to operationalise the dimensions and measures. Queensland University of Science and Technology (QUT) in Australia, has granted the authors all required approvals to conduct the case study and the 1st survey there. While the data collection for the case study has been completed and will be reported on a separate research effort, the data collection for the 1st survey will commence on July, 2010 and expected to be completed by August of the same year.

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