

# AN INFORMATION ORIENTED FRAMEWORK FOR RELATING IS/IT RESOURCES AND BUSINESS VALUE

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Abstract: Several studies have highlighted the importance of information and information quality in organisations and thus information is regarded as key determinant for the success and organisational performance. At the same time, there are numerous studies, frameworks and case studies examining the impact of information technology and systems to business value. Recently, several studies have proposed maturity models for information management capabilities in the literature, which claim that a higher maturity results in a higher organizational performance. Although these studies provide valuable information about the underlying relations, most are limited in specifying the relationship in more detail. Furthermore, most prominent approaches do not or at least not explicitly consider information as important influencing factor for organisational performance. In this paper, we aim to review selected contributions and introduce a model that shows how IS/IT resources and capabilities could be interlinked with IS/IT utilization, organizational performance and business value. Complementing other models and frameworks, we explicitly consider information from a management maturity, quality and risk perspective. Moreover, the paper discusses how each part of the model can be assessed in order to validate the model in future studies.

## 1 INTRODUCTION

Organisations invest substantial capital into the development and maintenance of information technologies (IT) and information systems (IS), in the following denoted as IS/IT as both terms are overlapping and difficult to differentiate in practice. IS/IT play an increasingly important role for the support of management activities on all organisational layers, and spending for IS/IT therefore increases year after year (Eastwood 2008). IS/IT add value due to their specific capabilities, which are (1) the capability to select and acquire information resources, (2) the capability to describe and organise information resources, (3) the capability to store and process information, (4) the

capability to integrate information, (5) the capability to search and retrieve information and (6) the capability to manage information (Fattahi & Afshar 2006).

However, the question how and to what extent IS/IT enhances organisational performance has been a major focus of interests and dispute over decades of IS/IT research (Melville et al. 2004). Some research pointed out that there might be even no positive relationship between IS/IT and business success, a phenomenon labelled as the IT productivity paradox (E. Brynjolfsson 1993). Brynjolfsson and Yang argue that a positive connection exists, although it can be diminished by miss-measurement, lags, redistribution, or miss-management (Erik Brynjolfsson & Shinkyu Yang

1996). Factors that influence the relationship have been identified, which include the type of IS/IT, management practices, organisational structure, and the competitive and macro environment (E. Brynjolfsson et al. 2002, Cooper et al. 2000, Dewan & K. L. Kraemer 2000). Moreover, value can be captured outside the organisation by trading partners or end customers (Bresnahan 1986, Hitt & E. Brynjolfsson 1996). Furthermore several studies have shown a significant impact of information and its quality on the performance of an organization (Redman 1998, English 1999, Slone 2006).

So far, frameworks that attempt to explain the IS/IT business value relationship range from focusing either on IS/IT resources and capabilities, utilization/usage and behavioural aspects of IS/IT, impact on business process and decisions, or IS/IT performance measurements (Nevo & Wade 2010; Delone & McLean 2003; Melville et al. 2004; Irani 2002). Delone & McLean's models indicate the importance of information and information quality to understand the IS/IT business impact, but do not specify its role further (Delone & McLean 2003; DeLone & McLean 1992).

In this paper, we show how these frameworks could be combined to a coherent model that relates the discussed aspects. Moreover, we argue that a framework that aims to explain the business value of IS/IT has to be centred around information as a resource, since IT is the primary technology that is used to manage information (Eaton et al. 1988).

In order to explicitly represent informational aspects, we propose therefore to extend current frameworks by adding an information perspective that puts a stronger emphasis on information quality and information-quality related risks. Objective of this work is to link previous work on the business impact of IS/IT with the extensive body of knowledge of the information quality discipline (e.g. Wang & Strong 1996, Ge & Helfert 2008), which, as far as we know, has been mostly ignored in the previous attempts by the IS community to explain the IS/IT business value. This new extended framework can serve as a bridge between existing frameworks by adding information management, information quality and information risks (caused by poor information quality) as the elements that link IS/IT resources with organizational performance. The results can hence be helpful to explain the actual business value of IS/IT from an information perspective and provide a reference point for further research.

The paper is structured as followed: First, we give an extensive review of related work that

provides the components to build and explain the IS/IT business value chain, but also uncovers its limitations. Then, we propose and describe a new framework, which is subsequently discussed regarding its validity, but also examined to outline research directions for the future.

## 2 RELATED WORK

Gustafsson et al. have presented a comprehensive model that aims to explain the business impact of IS/IT, which has three generic elements: IT, organizational impact, and business value (Gustafsson et al. 2009), as shown in Figure 1. Other related frameworks have been presented in the literature aiming to refine this generic model.

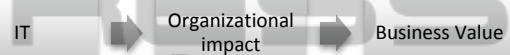


Figure 1: A generic model of IS/IT business value (Gustafsson et al. 2009).

We use this framework as orientation to relate other frameworks. First, we give an overview of work in the area of maturity models for information management (section 2.1). Then we present related frameworks by classifying them into four categories depending on their primary focus: frameworks that focus on resources and IS/IT capabilities (section 2.2), frameworks that concentrate on IS/IT utilisation and behavioural aspects (sections 2.3), frameworks that centre on processes and decisions (section 2.4), frameworks that have a focus on IS/IT performance and impact measurement (section 2.5).

### 2.1 Information Management Maturity

As it will be discussed in the next sections, many frameworks about business value of IS/IT aim at explaining a particular part of the value chain. They do not attempt to show how to improve the input factors in order to increase IS/IT business value in an organization. A collection of work that shares this goal is work that has been conducted in the area of information management maturity models. This work stream is mostly based on the capability maturity models proposed in the software engineering discipline (Humphrey 1988), which have their roots in Crosby's maturity model introduced in the quality management area (Crosby 1979). A maturity model is used to assess capabilities by evaluating the maturity of processes

and to identify priority areas for improvement. A typical model consists of five maturity levels: initial (level 1), repeatable (level 2), defined (level 3), managed (level 4), and optimizing (level 5), although levels are sometimes named differently. Information quality management maturity frameworks specifically focus on evaluating capabilities for information quality management. The Information Quality Maturity Grid (IQMMG) has been a first attempt (English 1999), which is build on (Crosby 1979). However, this model does not provide an assessment methodology and has not been extensively validated. Ryu et al. show in an empirical study with 119 participants that a company that moves up in the information quality management maturity ladder is likely to improve information quality (Ryu et al. 2006). More recent, information management maturity models specifically show how information management maturity can be improved based on the maturity assessment. Cabellero et al., for instance, describe an information system as a collection of information management processes and each process as a combination of two sub-processes, the first one aims at manufacturing an information product, and the second one aims at ensuring a high quality of the first sub-process (Caballero et al. 2008). Information quality in the whole information system can therefore be improved by focusing on critical information management processes. Similarly, IQM-CMM, a maturity model that is based on an extensive Delphi study, defines 13 key performance areas and 48 critical success factors and an assessment methodology to identify critical areas for improvement (Baškarada 2009). Moreover, Baškarada's work provides further empirical evidence, which supports the hypothesis that a movement to a higher information quality management maturity level increases the level of information quality. However, this work does not make any attempt to link higher levels of information quality to higher levels of organisational performance.

## 2.2 Resources and IS/IT Capabilities

Nevo and Wade (2010) suggest a path that links IS/IT assets to sustainable competitive advantage. Their model describes how IS/IT assets and organizational resources such as departments or teams are combined in order to create IS/IT-enabled resources, which can provide sustainable competitive advantage for a company. The model is based on systems theory and conducts a resource-

based view on the strategic potential of an organizational resource. This potential reflects the ability of implementing strategies to improve firms' efficiency and effectiveness. It directly indicates a firm's sustainable competitive advantage. The work provides a path to explore the business value from IS/IT assets. In the presence of compatibility and integration effort, sustainable competitive advantage can be attained by IS/IT-enabled resources, which is a result of interactions between IS/IT assets and organizational resources. Moreover Melville et al. (2004) conduct an extensive review on the literature that studies the relationship between IS/IT resources and organizational performance. Based on the review, they propose an integrative model of IS/IT business value that connects IS/IT resources (in form of technology and humans) and complementary organisational resources to organisational performance. They conclude that IS/IT resource is confirmed to be valuable and that it can provide various potential benefits such as quality improvement and cost reduction.

Relating IS/IT resources to IS/IT capability, Ravichandran and Lertwongsatien (2005) consider IS/IT capability as the ability to deploy IS/IT resources. They further point out that IS/IT resources are the raw materials in the development of IS/IT capabilities. Their findings confirm that IS/IT resources are positively associated with IS/IT capabilities, which in turn affect Firm's Performance. Bharadwaj (2000) conduct an empirical research to study the relationship between IS/IT capability and firm performance. The paper defines IS/IT capability as the "ability to mobilize and deploy IS/IT-based resources in combination or copresent with other resources and capabilities" (p.171). IS/IT-based resources can be classified into IS/IT infrastructure, human IS/IT skills, and IS/IT-enabled intangibles. Bharadwaj discusses the three resource-based views of IS/IT and develops the notion of IS/IT as an organizational capability. With an empirical test, this work concludes that increasing IS/IT capability can result in increasing organizational performance. It also indicates the importance of creating a firm-wide IS/IT capability rather than merely investing in IS/IT.

## 2.3 IS/IT Utilization

Apart from the resource-based view above, some researchers investigate the organizational impact from the view of IS/IT utilization by recognising the behavioural aspects and individual task performance. For instance, Goodhue and Thompson

(1995) propose a model that focuses on association between information systems and individual performance, i.e. the task technology fitness (TTF). Their work emphasizes the fit between IS/IT and users' tasks and provides an evaluation approach to test whether IS/IT meets the user needs. They conclude their work by showing how IS/IT add value to individual performance and arguing the effects of task-technology fit and utilization on IS/IT success, diagnostics for IS/IT problems, and related user involvement. In addition, they also point out that data quality is one of the key constructs to identify the research gaps between systems capabilities and user needs. Furthermore, Goodhue (1995) propose the user evaluation of TTF as a measure of IS/IT success. He defines TTF as "the extent that technology functionality matches task requirements and individual abilities" (p.1829). From this definition, three factors can be found relating to TTF, which are task, technology and individual. Thus users evaluate TTF based on the extent to which systems meet their needs and abilities. By using a survey, Goodhue provides both theoretical and empirical basis of user evaluations of TTF as a measure of IS/IT success. Connecting TTF to utilisation, Goodhue considers utilization as a performance indicator besides TTF. Furthermore, utilization can be affected by TTF. This means if a technology is useful, a higher TTF of the technology will result in a better performance.

Based on a systematic review, Delone and McLean (1992) propose a comprehensive IS/IT success model that stresses the effects of use and user satisfaction on individual and organizational impact. System quality and information quality are considered as the influencing factors to use and user satisfaction. Importantly, this model brought the attention of information quality to the IS/IT research community and can be considered as one of the pioneering contributions in information quality research. Ten years later, Delone and McLean (2003) proposed a revised model that directly focusses on the net benefit instead of organisational impact. As the net benefit can be considered as one form of business value, Delone and McLean' model is not only in line with the model from Gustafsson et al. (2009), but also emphasizes the importance of information quality and service quality to business value.

## 2.4 Process and Decision Impact

A substantial contribution to understand IS/IT business value has been studies showing how IS/IT

impacts on business processes and/or decision making. A business process can be defined "a specific ordering of work activities across time and place, with a beginning, an end, and clearly identified inputs and outputs: a structure for action" (Davenport 1993, p.5). Porter and Millar argue that activities that create value consist of a physical and an information-processing component and each value activity uses information (Porter & Millar 1985). Information technology has therefore a strategic significance in every company as it can transform the value chain of a product or service. In their integrative model of IS/IT business value, Mooney et al. propose a process framework for assessing the IS/IT business value (Mooney, Gurbaxani, et al. 1996). They present a typology of processes that subdivides business processes into operational and management processes and argue that IS/IT creates business value as it has automational, informational, and transformational effects on the processes. Similarly, Melville et al. see business processes and business process performance as the key steps that link IS/IT resources and complementary organizational resources to organizational performance (Melville, K. Kraemer, et al. 2004). Moreover, they suspect that in a net-enabled organization (Straub & R. T. Watson 2001), IS/IT may additionally enable process synthesis and integration of processes across conventional organizational and physical boundaries (Basu & Blanning 2003).

Other researchers gathered evidence that information quality has a considerable effect on decision quality. Keller and Staelin investigate the effects of quality and quantity of information on decision effectiveness of consumers (Keller & Staelin 1987). They conducted an experiment with four different levels of information quantity and four different levels of information quality. Their results indicate that increasing information quantity impairs decision effectiveness and, in contrast, increasing information quality improves decision effectiveness. Jung et al. make a study to explore the impact of representational information quality, (which comprises the IQ dimensions interpretability, easy to understand, and concise and consistent representation) on decision effectiveness in a laboratory experiment with two tasks, which have different levels of complexity (Jung, Olfman, et al. 2005). The results strongly support the hypothesis that a higher representational data quality improves the decision-making performance regarding problem-solving accuracy and time. Furthermore, Ge and Helfert's work shows that the improvement

of information quality in the intrinsic category (e.g. accuracy) and in the contextual category (e.g. completeness) (Ge & Helfert 2008) of Wang and Strong's information quality framework enhance decision quality (Wang & Strong 1996). Overall, there is sufficient evidence to conclude that IS/IT has a significant impact on decision making and there are many indicators that it also impacts business processes through automational, informational, and transformational effects.

## 2.5 IS/IT Performance & Impact Measurement

In addition to measuring IS/IT performance and its impact to organizations, organizational performance has always been of consideration to IS/IT researchers and practitioners, resulting in a plethora of performance related contributions. Earlier approaches focused, for example, on the economic value of information systems (e.g. van Wegen & de Hoog 1996). They were more recently detailed, as outlined above, to frameworks for assigning the impact of IS/IT to businesses (Mooney et al. 1996) (Melville et al. 2004). Irani (2002) provides a review of literature in the area of IS/IT evaluation. In addition to these IS/IT oriented frameworks, research related to performance measurement (PM) have resulted in an abundance of recommendations, frameworks and approaches for PM systems (Folan, Browne 2005). PM recommendations provide some indications for performance measures, whereas frameworks provide more information about the process or PM system. PM systems aim to provide a detailed PM process together with PM indicators.

However, in comparison to the variety of PM frameworks, there are only very few comprehensive PM systems in existence. As these contributions are mostly based on organizational best practice and experiences, the comparison of various performances measures between different organisations is difficult or not possible, and thus prevents thorough examination between IS/IT and organisational performance.

Folan and Browne (2005) outline major PM recommendations, frameworks and systems. In relation to our work we selected four approaches as most indicative. Fitzgerald et al. (1991) examine the result and determinants related to performance, and distinguish explicitly in their framework competitiveness and performance as results in contrast to the determinants such as quality, flexibility, resource utilization and innovation. The relationship between quality and performance was

more recently examined by Angel and Chandra (2001) and is seen as essential in order to understand the different elements influencing organizational performance. The balanced scorecard represents a prominent PM system as an approach to describe various views on organizational performance together with a management and measurement approach (Kaplan & Norton 1992). As described above, Mooney et al. 1996 describe a process oriented framework for assessing the business value of IS/IT, and include the value perspective. Neely et al. (2000) describe a structured methodology for the design of performance measurement system. Explicit performance indicators are provided for example in Medori and Steeple's (2000), Krauth et al. (2005) and practitioners oriented reference models such as SCOR (Huan et al. 2004).

## 2.6 Summary

Based on the literature review, the IS/IT business value can be explained using the four relationships:

- 1) IS/IT resources and complementary organizational resources influence IS/IT capabilities.
- 2) IS/IT capabilities further have an impact on IS/IT utilization.
- 3) IS/IT utilization affects business processes and decision-making.
- 4) These effects are visible in the short-term in the form of financials and other performance measures; in the long-term it has an impact on competitive advantage.

As shown in Table 1, existing work focuses only at one or two aspect of the IS/IT business value chain. We therefore propose a new IS/IT business value framework that integrates the current work on resources and IS/IT capabilities, IS/IT utilization, process and decision impact, and performance and impact measurement.

Moreover, the role of information as a resource is not explicitly mentioned in most of the frameworks. The reviewed literature has thus so far ignored or undervalued the role of information in the IS/IT business value chain. The functionality of IS/IT is limited to select, acquire, describe, organise, store, process, integrate, search, retrieve and manage information resources (Fatahi & Afshar 2006). The input and output of IS/IT is therefore always information and can be compared to the physical in- and output in a traditional manufacturing system (Ballou et al. 1998).

Table 1: IS/IT business value literature overview.

Literature	(a)	(b)	(c)	(d)
<b>Information Management Maturity</b>				
English (1999)*	●	○	○	○
Ryu et al. (2006)*	●	◐	○	○
Caballero et al. (2008)*	●	○	○	○
Başkarada (2009)*	●	◐	○	○
<b>Resources and IS/IT Capabilities</b>				
Nevo and Wade (2010)	●	○	◐	○
Melville et al. (2004)	●	○	◐	◐
Ravichandran & Lertwongsatien (2005)	●	○	○	◐
Bharadwaj (2000)	●	○	○	◐
<b>IS/IT Utilization</b>				
Delone & McLean (1992)*	○	●	◐	◐
Delone & McLean (2003)*	○	●	◐	○
Goodhue and Thompson (1995)	○	●	○	◐
Goodhue (1995)	○	●	○	◐
<b>Process and Decision Impact Frameworks</b>				
Porter & Millar (1985)	○	○	●	●
Mooney et al. (1996)	○	○	●	●
Melville et al. (2004)	●	○	●	◐
Keller & Staelin (1987)*	○	○	●	○
Jung et al. (2005)*	○	○	●	○
Ge & M. Helfert (2008)*	○	○	●	○
<b>IS/IT Performance &amp; Impact Measurement</b>				
Fitzgerald et al. (1991)	○	○	○	◐
Kaplan & Norton (1992)	○	○	○	●
Neely et al. (2000)	○	○	○	◐
Medori and Steeple's (2000)	○	○	○	●

Legend:

\* Information quality is explicitly mentioned.

(a) Resources and IS/IT capabilities

(b) IS/IT usage and behavioural aspects

(c) Processes and decisions

(d) IS/IT performance and impact measurement

● fully covered ◐ partially covered ○ not covered

As a consequence, a framework that tries to explain the relationship between IS/IT and business value should be centred on information as a resource and describe how IS/IT is interlinked to information management, quality, and risks. In the next section, we present a framework that aims at filling this gap by explicitly considering the information-related concepts in each step of the IS/IT business value chain.

### 3 AN INFORMATION ORIENTED FRAMEWORK

Figure 2 shows a framework that integrates the components from (a) to (d) in Table 1 and its underlying relationships. Moreover, related concepts are connected to each component in the figure.

The inventor of the resource-based view of the firm has defined resources as “those (tangible and intangible) assets which are tied semi-permanently to the firm” (Wernerfelt 1984, p.172). IS/IT resources comprise therefore everything from hard- and software, IS/IT personnel and managers, to technological knowledge that is available in the given organisation. Complementary organisational resources are all other resources in the company that interplay with the IS/IT resources. In addition, information resources, which have been not mentioned in previous frameworks, are an important type of resource that should be considered in particular. Information resources are generated and modified in the process of utilization of IS/IT and therefore create an enforcing feedback loop, enabling the continuous enhancement of IS/IT capabilities.

Capabilities can be viewed as superior business processes (Stalk et al. 1992). All resources taken together need to be coordinated in order to form IS/IT capabilities. The coordination of the resources itself requires special capabilities, i.e. coordination capabilities, which again take use of a part of the defined resources, e.g. management personnel, information resources (Mills et al. 2003). Moreover, Mills et al. suggest that capabilities can be coordinated in order to get higher level capabilities. Coordinating all IS/IT capabilities can therefore be seen as a higher level capability, i.e. the information manufacturing (Ballou et al. 1998) or information management capability.

The maturity of the IS/IT capabilities can be defined using existing information management maturity model like, for instance, IQM-CMM (Başkarada 2009). Altogether, the IS/IT capabilities have a major influence on the “fitness for use” (Wang & Strong 1996, p. 6) of information, i.e. information quality, which can be observed when IS/IT is utilized to use information in a business process or for decision making. For instance, if a server that contains customer data has constantly downtimes, it will affect the ‘accessibility’ of the customer data, which is one of the frequently used information quality dimensions (e.g. Wang & Strong 1996, Batini & Scannapieco 2006). If the customer data is used, for example, by an online shop to send

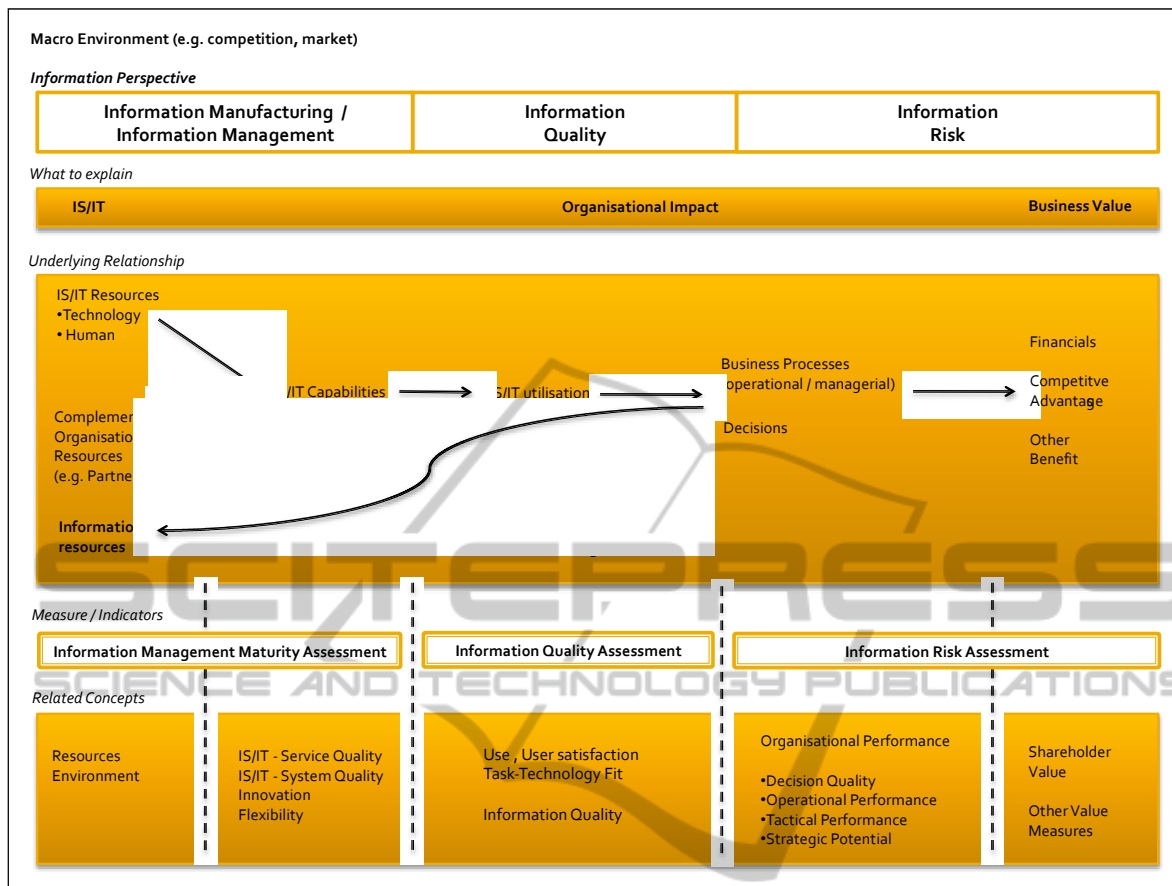


Figure 2: An integrated framework for IS/IT business value from an information perspective.

out products to the customers, the unavailability of the customer data can have a major impact on some of the business processes that are related to logistics. These information-quality related risks, which are referred as ‘information risks’ in the following, eventually have an influence on the financial performance and on the competitiveness of an organisation, or other targets depending on the mission and goals of the particular organisation (Redman 1998). Measures can be both financial and non financial and are strongly context-dependent. The entire IS/IT business value chain takes place in (1) a macro environment, which is strongly dependent on a number of external factors like industry, market situation, competition, etc., and in (2) a micro environment, which summarizes the soft factors within an organisation that are difficult to change in the short-term, e.g. the company culture and employee satisfaction.

The assessment of each component in the proposed framework is important to ensure its usability and for validation purposes. Each component in the information-oriented framework can be measured by using existing methods.

Information management resources and capabilities can be assessed using one of the information management maturity models that have been presented in the literature (e.g. Caballero et al 2008, Baškarada 2009). The immediate success of IS/IT utilisation can be measured with the help of assessment methodologies for information quality, which can be classified into objective and subjective assessment (Batini & Scannapieco 2006). Information risks in form of the impact of information quality on business processes, decisions, and eventually on the related financials, competitive advantage, and other measures, can be assessed using a number of different methods to measure business impact of information quality that range from simple techniques to sophisticated methodologies (e.g. McGilvray 2008, English 1999, Loshin 2001). The most recent contribution is a process for ‘Total Information Risk Management’ that combines all three types of assessments, i.e. of information management maturity, information quality and information risk, in order to guide effectively through the improvement of IS/IT in an

organisation (Borek et al. 2011). This process might therefore provide a good basis for an empirical validation of the framework for the future.

In summary, information is manufactured and managed with the help of IS/IT capabilities that use a variety of IS/IT resources, complementary organisational resources, and already existing information resources. The quality of the resulting information products/resources is defined in the context of its use, i.e. depending on the IS/IT utilization. If information quality is poor, the IS/IT utilization cannot meet its purpose and might have a negative influence on business processes, decision making and eventually on organisational performance. These effects might be even observable in highly aggregated measures like, for instance, changes of the share prices of a company in the stock market.

#### 4 DISCUSSION

In the above section we proposed a framework for IS/IT business value. The framework is developed based on reviewing relevant literature. In the following, we discuss its validity based on the following four questions:

- (1) Is the model complete and accurate? Is there a linkage missing?
- (2) Which relationships in the model have a large amount of empirical evidence, and where is evidence lacking?
- (3) Which research methods have been used and what are their limitations?
- (4) How does the proposed model differ from other models?

This paper has reviewed a part of the existing literature and uses the concepts and conclusions from the literature to build the new model. There are no major contradictions that might indicate inaccuracy in the model. Furthermore, the review has taken previous literature reviews into account. Although specific terms might have not been mentioned, major concepts and relationships from the literature in the IS/IT business value chain should be therefore covered.

The relationship between IS/IT capabilities and IS/IT utilization (e.g. Goodhue 1995, Goodhue & Thompson 1995) and the relationship between information use and decision performance (e.g. Keller & Staelin 1987, Jung et al. 2005) have been demonstrated in major studies. It is further a fact of life that business process performance and decision

performance have an impact on organisational performance, which can be reflected by financial performance and shareholder value (e.g. Davenport 1993). However, the creation of IS/IT capabilities from IS/IT and complementary organisational resources and information resources is an underexplored area that does not provide sufficient empirical evidence. Similarly, the impact of IS/IT utilisation on business processes needs to be further investigated. Finally, a problem with research that tries to link a concept to a performance measurement is that performance is very context-dependent and that there are different layers of performance, e.g. business process performance, financial performance, shareholder value etc. Additionally, many external variables can influence performance like, for example, country characteristics, industry characteristics and trading partner resources. The variety of approaches proposed (and used) is therefore nearly infinite.

In the literature so far, predominant research methods have been conceptual work and literature reviews, case study research, experimental research and survey research. A more explorative qualitative research method like design science (e.g. Hevner et al. 2004) would be suitable to get more in-depth insights into the investigated relationships. Moreover, a better combination of technical computer science and IS/IT management social science research might provide better results.

The framework proposed in this paper has a higher granularity and links performance closer to IS/IT by using an information perspective, integrating the body of knowledge from the IS/IT and the information quality discipline. It can provide a useful research framework for researchers, who can focus on different sections of the whole model.

#### 5 CONCLUDING REMARKS

The question if and how IT and IS enhances organisational performance has been a major point of focus in the IS communities in the last decades (Banker & Kauffman 2004). Connected to this discussion has been the IS/IT business value chain that aims to explain the different steps and relationships that lead from IS/IT resources to business value. We have proposed an integrated framework for IS/IT business value and discussed its validity. Reviewing prominent frameworks one key observation demonstrated the lack of information focus in these frameworks. The proposed framework aims to address this limitation, and includes



explicitly an information lens to the IS/IT-Business value discussion. This will help, so we believe, researchers to explain some of the important observations and give practitioners indications to improve the IS/IT capabilities. As indicated in the discussion, rather than replacing existing frameworks, it complements existing approaches. Our frameworks can thus bridge the often isolated research works addressing the complex relationship between IS/IT and business value. We discussed assessment for information management, information quality and information risks in this context. In applying our framework, these assessment approaches can help other researchers to examine some of the key relationships between IS/IT and business value. In further research, we aim to expand on these assessment techniques and apply our framework in empirical studies.

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