How IT Enabled Investments Bring Value to the Business: A Literature Review

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Abstract

Already in the nineties, studies discussed the IT productivity paradox, where no clear correlation could be found between IT spend and the bottom-line impact. On the other hand, other research streams emerged, revealing findings that do illustrate the positive impact of IT enabled investments on firm performance. Several studies concluded that the necessary conditions to overcome the IT productivity paradox are to be found in a better IT value management approach. New IT value management frameworks and models are emerging and promoted by both academics and advisory entities, but while organisations recognise its importance, they are still struggling with getting such IT value management practices implemented into their organisations. This paper investigates prior research on IT value management and the implementation of it using a model of structures, processes and relational mechanisms. By doing so, this paper wants to explore future research opportunities for academics and provide practitioners with an accurate overview of proven governance and management practices described in literature that can be used in their day-to-day operations.

1. Introduction

The study field regarding value creation out of information technology (IT) enabled investments has always been open to discussion as manifested by inclusive and contesting results [53], [54], [56], [63]. Already in the nineties, studies discussed the IT productivity paradox [7], [8], [32], [62], where no clear correlation could be found between IT spend and the bottom-line impact. In the early twenty-first century, studies continued to challenge the value of IT [9], [45]. According to Willcocks and Lester [79], an important part of this vagueness is caused by weaknesses in the measurement and evaluation practices of IT performance. In this context Brynjolfsson [7] omits in his research “it appears that the shortfall of IT productivity is as much due to deficiencies in our measurement and methodological toolkit as to mismanagement by developers and users of IT.” On the other hand, other research streams emerged, revealing findings that do illustrate the positive impact of IT enabled investments on firm performance [1], [10], [21]. For instance, Chari [10] concludes that “increasing IT investment to accompany a firm’s overall diversification may be justified by the greater performance impact of such investments”. Anderson [1] found positive evidence on value creation out of IT enabled investments in transform industries where IT takes the role of redefining the business [11]. Chan [11] assigns these IT value research streams to the question of what value do IT enabled investments deliver. On this topic much more research has been executed [14]. For instance on market level (e.g. the impact of IT investments on stock prices) [23], on organisational level (e.g. effect of IT investments on firm profit and firm productivity) [69], and on individual level (e.g. impact on business decision making) [3]. Also, several models have been developed to measure and evaluate business value from IT enabled investments in an integrated way [14], [24], [68].

On the contrary, less literature is available on how IT enabled investments should be managed and organised in order to achieve the scheduled business value, which is confirmed by Chan’s [11] conclusions stating that more research is needed on questions such as why, where, when, how, and to whom do IT enabled investments provide value. In this paper, we will focus on the how question including various difficult issues to address. In the first place, the transformation of IT enabled investments into business value does not only include IT, but involves also business people, business processes and so on. Melville et. al. [50] states that the achievement of business value “leads to a context-contingent set of synergistic combinations of IT and other organisational resources, including workplace practices, change initiatives, organisational structure, and financial condition”. Only by combining IT and non-IT resources a sustained competitive advantage can be obtained through IT enabled investments [50]. Secondly, there is a need for superior managerial skills and approaches [18]. Unlike technical skills, managerial
skills are likely to be a source of sustained competitive advantage [49] and therefore important in managing and organising IT enabled investments. According to Peppard and Ward [59] this should be more emphasised than IT itself. In addition, such management involvement can be achieved through well integrated IT governance practices in IT investment decision making. [78], [79] Many authors [31], [40], [44], [58], [65] have therefore developed frameworks, models and mechanisms to create an integrated approach for the creation and capturing of business value out of IT enabled investments. Moreover, a more practice oriented approach has been developed by the IT Governance Institute [36], called Val IT, to support business executives in achieving return from the large amounts of money they spend on IT [35], [70], [75]. Despite of these approaches, Keyes-Pearce [39] “signals room for further development of theoretical considerations and frameworks targeting IT value management”. The aim of this paper is to give a comprehensive overview on IT value management theories, models and practices based on literature. Starting from this literature review, we want to further explore this challenging research domain and define research questions and new approaches. This way, the literature review attempts to guide future thinking and research on IT value management, such as the role of non-IT resources and managerial approaches in achieving business value from IT enabled investments. Also, our objective is to provide practitioners with a list of both proven and emerging practices for implementing IT value management.

The structure of this paper is as following. First, a deeper understanding will be provided on IT value management through literature review. Next, several existing approaches will be proposed that can help with the implementation of IT value management, based on a model consisting of structures, processes and relational mechanisms [16], [60]. Finally, a literature synthesis identifies important gaps in IT value management literature which nurtures propositions for future research opportunities.

2. Understanding IT value management: theories and concepts from literature

By addressing the denomination and explanation of projects, programs and portfolios, we first want to clarify our interpretation of an IT enabled investment. Afterwards, a deeper understanding of the IT value management concept is provided via a literature review on the basis of which a definition is derived incorporating the most important commonalities.

2.1. Projects, programs and portfolio

The focus of IT value management may lie in different spaces. It may target the entire IT department [52] or individual IT enabled projects and programs [48], as well as the overall IT enabled investment portfolio [13], [14], [65]. Moreover, the focus can be put on discretionary or mandatory investments [37]. Our attention is focused on a discretionary IT enabled business investment program consisting of one or more (business and IT) projects and that is part of an overall IT enabled business investment portfolio. This three-layered focus is consistent with Thorp [70] as well as with Val IT [36]. The latter defines the three components as following: 1) a project is “a structured set of activities concerned with delivering a defined capability (that is necessary but not sufficient to achieve a required business outcome) to the enterprise based on an agreed schedule and budget”, 2) a program is “a structured grouping of interdependent projects that are both necessary and sufficient to achieve a desired business outcome and create value”, and 3) a portfolio is a “groupings of ‘objects of interest’ (investment programs, IT services, IT projects, other IT assets) managed and monitored to optimise business value”. [36]

It is clear that programs and projects differ seriously from each other [4]. They may be different in scope and reach of objectives. Projects are part of a program and only by the combination of the right business and IT projects the necessary business value can be created from the IT enabled business investment program. The compulsory oversight of all projects is provided by a (business) program, the overview of all programs together with the required resources is managed in a portfolio [36]. A portfolio manages the programs according to attributes such as risk management, strategic business/IT alignment, benefits realisation, costs and interdependencies between programs. [41] In addition, it is important that the programs are managed “through their full economic life-cycle”, as stated by ITGI [36]. De Reyck et. al. [19] consider IT portfolio management as “the entire portfolio of programs a company is engaged in, in order to make decisions in terms of which programs are to be given priority, and which programs are to be added to or removed from the portfolio”. According to ITGI [36], all three components; projects, programs and portfolio, are crucial in the delivery of business value out of IT enabled investments. The reason that we stress on both business and IT projects and introduce the concept of IT enabled business investment program, is that authors such as
Peppard and Ward [58], Thorp [70] and Van Grembergen and De Haes [76] emphasise that technology and IT investments itself will not create business value, but that complementary investments on the business side are necessary in order to derive business value from IT enabled investments. Peppard and Ward [58] list these additional business investments as “business changes and innovations, whether they are product/service innovation, new business models, or process changes, whereby organisations must be able to assimilate this change if value is to be ultimately realised”.

2.2. What is IT value management?

IT value management is one of these concepts that emerged suddenly during the nineties, largely in response to the business value delivery question from IT enabled investments. Unfortunately, the subject is less investigated by researchers. To come to a clear definition and understanding of the concept of IT value management, Table 1 presents nine references targeting the concept of IT value management regarding IT enabled investments. During this literature review, we have found many commonalities among the definitions on the concept of IT value management. These will be discussed below.

As the definitions in Table 1 show, all authors but one [58] present their concept of IT value management through a process theory, a system or a framework involving many different processes such as the Val IT framework including 22 processes [36]. The IT capability proposed by Peppard and Ward [58], indicates that the creation of business value from IT enabled investments is an organisational capacity that is effected via IT competencies. Bharadwaj [5] defines an IT capability as “not so much a specific set of sophisticated technological functionalities as it is an enterprise-wide capability to leverage technology to differentiate from competition”. The combination of an IT value management capability prompted by four processes (formulation of initiative value principles, measurement system design, strategic control system deployment, learning about IT-performance linkages) is highlighted by Lentz et. al. [44]. Further research on this combination and the relationship between capabilities and processes seems necessary and might examine the exact role a capability is playing in the execution of IT value management processes.

Apart from organising and managing IT enabled investments, the IT value management process starts prior to the investment and also includes an evaluation at the end. Previously, the potential value of all proposed projects and programs should be evaluated before approval and initiation [13], [64], which can be accomplished by an initial business case [40]. Once the IT enabled investment is completed, it is suggested to perform an assessment of the realised business value. [40], [64] Connecting the end back to the start, it is vital that one can learn from his actions. Therefore, several authors [30], [36], [44], [64] suggest a learning reaction or feedback loop in order to understand the relationship between the investment performed and the business value delivered. The references in Table 1 lack general application of these three concepts (assessing potential value, evaluating realised value and establishing a feedback learning process), so we identify them as interesting subjects for further investigation, such as the suggestion of an explicit management process to foster and communicate innovations as part of IT value management [30].

The operation of IT value management and execution of IT investments is a joint effort by business and IT. Involvement of the business side is demonstrated in two ways. First, by integrating IT enabled investments into business change programs [36], [70] requiring the use of IT and non-IT or complementary resources such as human capital and business process redesign [13], [40], [64]. Second, as IT value cannot be separated from the business [64], it is the responsibility of the entire organisation to achieve IT payoffs [40] whereby senior executives are specifically addressed to take up a leading role in IT strategic planning [44] and the management of value from IT enabled investments [30].

Finally, we wish to highlight some extra aspects that has drawn our attention and might need further investigation. IT value management in itself helps the organisation to understand, define and communicate its view on the concept of IT business value [30], [36], [44]. Also, the role of people seems to be very important in the execution of IT enabled investments [64]. Next, we see that the use of structures, processes, roles, formal and actual routines is necessary in the execution of IT enabled investments [30], [36], [58]. Last, the concept of IT value management should also undertake risk management, cost control, the selection and execution of investments [36].

Based on these insights, we want to put forward a working definition for IT value management as follows: IT value management is about the organisational processes, structures and relational mechanisms that enable business and IT to understand, initiate, prioritise, execute, organise, manage and evaluate IT enabled investments and their outcomes, to secure optimal value in the entire IT enabled investment portfolio for the organisation.
<table>
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<th>Study</th>
<th>Issues examined</th>
<th>Results</th>
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<tr>
<td>Henderson and Lentz [30]</td>
<td>Relationship of three topics (working - roles and responsibilities, learning and innovation) relative to IT investments and organisational performance.</td>
<td>- Formal and actual routines (roles, responsibilities and committees) are necessary &quot;for designing and deploying strategic initiatives.&quot;&lt;br&gt; - &quot;Learning the relationship between IT investments and firm performance is critical to increase this performance and to improve operational effectiveness.&quot;&lt;br&gt; - Organisational learning processes and parts of value management system.</td>
<td>IT value management is a &quot;system for actively engaging executives in the creation and adaptation of processes by which the firm understands and manages the value of IT investments.&quot;</td>
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| Soh and Markus [65]         | Development of process theory to improve organisational performance via IT investments. | - A three-step process theory on when, how and why IT investments deliver firm performance:  
  - the transformation of IT expenditure in IT assets,<br> - the appropriate use of quality IT assets yielding IT impacts,<br> - the improvement in organisational performance caused by IT impacts. | "A process theory of improved organisational performance due to IT investment shows what happens when the desired outcomes occur, but it does not necessarily describe or explain why the outcomes fail to occur." |
| Davern and Kaufman [13]     | • How potential value of an IT investment can be identified and measured.<br> • Describing conversion contingencies across multiple levels of analysis.<br> • The importance of the locus of value. | • The measurement of potential value is feasible and useful.<br> • Conversion of potential to realised value is impacted through presence of appropriate complementary assets, such as managerial controls.<br> • IT investments have great potential for business value. | "The value creation process starts with the potential offered by a project, which precedes the expenditure or investment in IT. Conversion contingencies, some controllable by management, influence how the expenditures made impact firm activities, and consequently the amount of value potential realised and the return on investment." |
| Lentz et al. [44]           | • Is the IT value management capability essential to effective IT planning?  
  "How companies achieve business value from IT-intensive business initiatives over time through a series of adaptive, ongoing processes." | • IT value management capability consists of four constituent processes:  
  - formulation of initiative value principles,<br> - measurement system design,<br> - strategic control system deployment,<br> - learning about IT-performance linkages. | "IT value management links IT investment decisions with specific, ongoing investment management processes such as measurement, strategic control, and organisational learning and knowledge management. [...]. Managed cohesively, IT value management processes enable senior executives to focus on those IT planning routines and activities which will add business value." |
| Smith and McKeen [64]       | "How organisations are attempting to determine and develop effective IT value propositions." | • "Technology is being used as a catalyst to drive many different types of organisational transformation and strategy. Therefore, IT value can no longer be viewed in isolation from the other parts of business, namely people and information."<br> • The IT value proposition should be implemented by means of five principles; "to use a clearly defined portfolio value management process, to aim for chunks of value, to adopt a holistic orientation to technology value, to aim for joint ownership of technology initiatives, and to experiment more often." | "Developing and delivering the IT value proposition involves a three stage process addressing the identification of potential opportunities, for adding value [where after these should be] converted into effective applications of technology [which eventually] leads to the realisation of IT value by the organisation." |
| Kohli and Devaraj [40]       | • Research on the four phases (alignment, involvement, analysis, communication) of the AIAC framework.<br> • Application and validation of the AIAC framework in a case study. | • Three recommendations:  
  - "IT payoffs are the responsibility of the entire organisation, not just the IT department."<br> - "Management of IT payoffs begins prior to the investment (business case) and continues through post implementation."<br> - "IT payoffs are contingent upon creating and exploiting complementary assets." | "The AIAC framework helps to concieve and implement IT investment's payoffs, to ensure creation of appropriate assets needed to achieve the payoffs, and to measure the actual outcomes." |
| Peppard and Ward [58]       | • Application of resource based theory on IT strategy and management.<br> • Organisational IS capability and impact on business performance. | • IS capability is present on three levels:  
  - resource level: resources (e.g. skills, knowledge) "are the key ingredients of IS competencies",<br> - organisational level: how resources are "mobilised and marshalled via structures, processes / roles."
  - enterprise level: manifestation of IS capability with outcome in organisational performance.<br> • Organisations "with a strong IS capability can both leverage IS/IT enabled change for business advantage and respond rapidly to changes in the business environment."<br> • The extent to which IS competencies contribute towards the IS capability is dependent on the organisation's strategy and investment decisions. Both determine whether the IS capability is a source of competitive (dis)advantage or merely a necessity for competitive parity. | "IS capability is embedded within the fabric of the organisation. It can be tacit and difficult to identify but the presence and effectiveness of the capability is reflected in business performance." |
| ITGI [36]                   | A model to meet the practitioners need in implementing IT value management. | • Three domains to support the IT value management principles:  
  - value governance: "to ensure that value management practices are embedded in the enterprise",<br> - portfolio management: "to secure optimal value across the portfolio of IT-enabled investments",<br> - investment management: "to ensure individual IT-enabled investments deliver optimal value." | "The goal of IT value management is enabling the enterprise to realise optimal value at an affordable cost with an acceptable level of risk from IT enabled investments, to clearly define and communicate its view of what constitutes value, and to whom, and to select and execute investments." |
| Thorp [70]                  | Presentation of new enterprise value management theory | • Enterprise value management goes beyond the challenge of realising IT value - the benefits management approach. It builds on and extends benefits realisation with a value-driven strategy process.<br> • Enterprise value management is about more than IT investments, it handles IT enabled investments that are incorporated into business change programs. | "Enterprise Value Management helps organisations manage the complexities of the interaction of their strategies, their resources of value creation, and the ever-changing business environment in which they operate. It provides an understanding of all the sources of value, and how they interact, not as a simple chain, but as a network - a value network." |

Table 1: Literature overview on IT value management
3. Implementing IT value management: practices from literature

Now the significance of IT value management is delineated, we want to investigate possible practices that can help with the implementation of IT value management. This discussion will be guided through the use of a framework that has been previously applied in IT governance research by Peterson [60] and De Haes and Van Grembergen [16], consisting of structures, processes and relational mechanisms, as depicted in Figure 1. We employ this framework because of the great reciprocity between IT governance and IT value management [39].

Peterson [60] formulates structures as “structural (formal) devices and mechanisms for connecting and enabling horizontal, or liaison, contacts between business and IT management (decision making) functions”. Also hierarchical/vertical structures exist, (e.g. CIO/CEO), but have a less effective role in IT governance [60]. Processes refer to “the formalisation and institutionalisation of strategic IT decision making or IT monitoring procedures” [60]. More generally, processes include procedures, arrangements and routines which have a direct impact on the work behaviour of people and units in an organisation [20].

The relational mechanisms construct addresses the people aspect within the structures and processes, and focuses on realising various dimensions such as trust, respect, communication amongst all involved business and IT actors. [60] After their implementation, these practices should also be continuously improved [36].

Several practices found in literature that can be used to implement IT value management are depicted in Table 2 and will be discussed hereafter using the three components of the model.

![Figure 1: IT Value Management](image)

Based on Peterson [60], De Haes and Van Grembergen [16]

3.1. IT value management structures

Structural mechanisms are necessary to support communication and organise activities among different groups of people [5], and can take place in various formal and informal forms such as integrating managers, liaison positions, task forces, or committees. [51] Regarding IT enabled investments, the communication between business and IT people should be stimulated. Moreover IT enabled investments differ in many characteristics (e.g. complexity, functional scope, boundary span requirements and business impact) involving different organisational actors in the decision processes [79]. Therefore, multiple structural mechanisms on various levels in the organisation are desirable in order to make balanced and reasonable decisions about IT enabled investments. Distinct terminology is used in many publications making it arduous to understand and implement these practices.

An exploration on what structures as well as processes and relational mechanisms are used in contemporary firms might be very interesting, as suggested by other papers [13], [30], [44], [65]. Examples are legion and discussed below.

Board involvement is a crucial aspect in IT decision making although contemporary boards often have relatively little involvement in the planning and oversight of IT enabled investments. [2] Therefore at board level, a committee should help to motivate the consideration of IT as a regular board agenda point and to advise the board on strategic IT related topics, whether it is named IT governance committee [55], IT oversight committee [61], IT strategy committee [34] or IT leadership forum [36]. Regarding IT value management, this board committee has the responsibility to support two levels. To the management level, it provides direction on the IT strategy and reviews the risk, return, progress and competitiveness of major IT enabled investments in comparison with the budget. To the board, it reports on the findings of the previous activities. [34], [61] Furthermore, the committee should also continuously be seeking for investment opportunities with potential value [55], [36].

The IT steering committee is another high level committee that has to play an important role regarding IT value management issues as its presence demonstrates a positive influence on the management of IT enabled investments [37]. An IT steering committee is positioned at executive management level, and is responsible for the implementation of the broad IT strategy boundaries delineated by the board. The committee oversees major IT enabled programs and manages priorities, costs and resource allocation among them. It suggests changes to the program strategy and communicates the (changed) strategic goals to the project teams. [34] Moreover, the roles of an IT steering committee may change along with different organisational goals [71]. Looking at the
characteristics and responsibilities of an IT portfolio committee, such as the *investments and services board* [36], *portfolio management committee* [41], *portfolio review group* [46] or *project portfolio committee* [19], we found many commonalities between these committees and the IT steering committee which makes us believe that both bodies might have the same purpose. Certainly, further research is necessary for confirmation.

Within the portfolio of IT enabled investments, business and IT programs and projects should be executed successfully. Three secretariat functions may help the organisational actors in doing so. On program/portfolio level, a *value management office* (VMO) is presented to support the portfolio committee in the organisation and management of programs “including assessing and advising on investment opportunities, business cases, methods and controls, and reporting on the value progress of investment programs” [36]. Thorp [70] adds that the VMO facilitates the opportunity where specialists can give advice to business people in the set-up and formulation of programs. Also on program level, Val IT [36] recommends a *program management office* (PgMO) that is responsible for “supporting program managers, and gathering, assessing and reporting information about the conduct of their programs and constituent projects” [36]. On project level, the *project management office* (PMO) supplies the project managers with structures, systems, tools, education and training, and controls upon them. By this means, consistent and reliable project management methods are provided and project performance should improve impacting organisational profitability [48]. Eventually, this will also result in project management standards [42]. Both the VMO and PgMO are representative for the same (program) level and perform activities that might be perceived as closely related to each other. So, we suggest additional examination on the precise role and responsibilities of each body.

### 3.2. IT value management processes

The second construct depicted in the IT value management model (Figure 1) is processes. According to De Wit and Meyer [20], these include “arrangements, procedures and routines used to control and coordinate the various people and units within the organisation”. Peterson [60] relates processes more to IT, by referring to the “formalisation and institutionalisation of strategic IT decision making or IT monitoring procedures”. The processes portrayed in Table 2 and delineated below should be imbedded in the committees and offices described above.

On a strategic level, the *IT balanced scorecard* (BSC) is helpful in capturing the business value of IT enabled investments through its business perspective [72]. Cause-and-effect relationships together with the appropriate measures should be integrated into the BSC in order to function as a real management tool [72], [74]. Also, *strategic information systems planning* or SISP is proposed as a multi-dimensional
method [27] and is expedient in the planning and alignment of IT enabled investments with business goals to achieve a competitive advantage together with efficient and effective IT resource management [22], [25], [26].

On management level, three processes are used to help with the delivery of value from IT enabled investments. First, portfolio management [36], [41] or project portfolio management [19] certifies optimal value across the organisational portfolio of IT enabled investments [36] by prioritising, selecting and reviewing all investment programs [19] with a focus on risk management, cost control, benefits realisation, strategic alignment of business and IT objectives and interdependencies between the programs [41]. Multi-project planning on the other hand, focuses more on the tactical and operational decision making of multiple project organisation. [28] Second, program management facilitates the integration of multiple related projects to achieve benefits “that would not be realised when managed independently” [47] and provides help to program managers with the identification, planning, delivery and closure of programs [29], [56] on topics such as risk, quality, resource, utilisation, communication, roles and responsibilities [29], [47]. In this process, a continuous focus on the business objectives and constituent activities of the program are indispensible. [36] Third, project management supplies the project manager with formal practices – rules, standards and procedures – on establishing the strategic objectives, structure, planning and execution process, tools and metrics, and on the setting of an appropriate project culture. [48], [67] From the literature on processes and structures, we could ascertain a consistent view on the stratified approach of programs consisting of multiple projects that are managed in an overall portfolio of IT enabled investments [29], [41]. However, an examination in contemporary organisations seems useful to confirm the success of this approach.

The realisation of benefits from an IT enabled investment program will not just be realised, but needs to be carefully planned and managed. Benefits management is “a process of organising and managing IT enabled investments so the potential benefits are actually realised” [77] including a benefits realisation plan with the benefit sources, responsibilities and timescales for delivery [59].

Val IT [36] specifies two more processes to implement IT value management. First, to understand the candidate program and implementation options. Second, to develop, update and evaluate the initial and detailed program business case [36].

3.3. IT value management relational mechanisms

The relational mechanisms construct addresses the people aspect within the structures and processes, and focuses on realising various dimensions such as trust, respect and communication, amongst all involved business and IT actors. Peterson [60] defines it as “the active participation of, and collaborative relationship among, corporate executives, IT management, and business management (e.g., training)”. The issue of relational mechanisms has previously been examined in IT governance research [15], [16], [17], [75], [76], which comprises close interactions with the IT value management domain [39], and may serve as a guidance in the exploration of adequate relational mechanisms for IT value management (Table 2).

Val IT [36] advises the foundation of an informed and committed leadership “culture” propagated by the IT leadership forum (structure). This forum institutes the CIO with an effective reporting line creating the opportunity for the CIO to engage the board of directors in understanding and communicating the meaning of business value through IT enabled investments. Like IT governance awareness campaigns [15], [16], [17], it might be worth investigating whether specific awareness campaigns on the significance of IT value management are effective. Next, the use of knowledge management or learning opportunities is perceived as an integral part of IT value management (lessons learned). On the one hand, an organisation has to employ the results from the evaluation of IT enabled investments [30], [44], [64]. On the other hand, the IT value management processes itself should be assessed as well to learn from organisation and management issues [36]. Third, executives are specifically addressed to be actively engaged in the management and organisation of IT value management and IT enabled investments [30], [44]. This argument is closely related to the relational mechanism that “senior business and IT management should give the good example by acting as partners”, as identified by De Haes and Van Grembergen [17]. The relevance of this mechanism in IT value management earns more attention in further research. So does the impact of an appropriate value driven culture that enables the organisational actors in delivering business value from IT enabled investments. Despite of its importance for organisational performance [66], to date very little research has been executed on the role an organisational culture plays in the process of IT planning nor in its relationship towards IT investments and prioritisation [43].
**4. Contributions and future research**

This literature review addresses issues on IT value management, IT enabled investments and IT business value creation. Herein, we found several commonalities and proposed a working definition of IT value management. By using a model that has been successfully applied in IT research, we have tried to investigate various potential practices that might help with the implementation of IT value management.

This literature review has led to the identification of future research directions on IT value management. In the first part, we proposed further examination on three topics. First, on the combination and relationship between organisational capabilities and IT value management processes. Second, on the function of IT value management prior to and after IT enabled investments with regard to estimating the potential value and assessing the realised value. Also, the feedback through a learning process should be further explored. Third, we stipulated extra aspects that should be given more attention in research such as the people facet, structures, routines, responsibilities and committees. Regarding these research gaps, this paper attempted to offer a first contribution by investigating possible practices that can help with the implementation of IT value management. By using the model consisting of structures, processes and relational mechanisms, we have found more specific research topics for the future. As regard to structures, one should check the difference between a value management office and a program management office operating both on program level, and the variation in the responsibilities of an IT steering committee and an IT portfolio committee. For processes, it is interesting to investigate the stratified approach of portfolios, programs and projects and how organisations are using this in their day-to-day operations. On the topic of relational mechanisms, a lot of work is awaiting to study practices such as IT value management awareness campaigns, the role of executives in IT value management, the effect of a value driven culture and so on. Concerning all three constructs (structures, processes and relational mechanisms), further investigation is necessary to clarify the use of distinct terminology on similar practices and to perform empirical assessment on how these practices are employed in contemporary organisations struggling with the creation of business value from IT enabled investments and the implementation of IT value management.

As a starting point for future research, an interesting research question could be “how are contemporary organisations implementing IT value management to achieve business value from IT enabled investments?” First, this could start with an exploratory part in these contemporary organisations and perform qualitative case study research on how they employ IT value management practices. Together with the literature review, this results in a list of practices that could be challenged by a Delphi study carried out with field experts or through expert interviews to deal with the topics breadth and complexity. Besides completeness of the list, the field experts could verify various quality dimensions such as the effectiveness, importance and ease of implementation of all practices where from a minimum baseline could be distracted. Such results could be useful for academics to help filling the terminology gap on structures, processes and relational mechanisms as well as for practitioners to facilitate the implementation of IT value management in their day-to-day operations.

**5. References**


