

Investigating Factors Negatively Influencing IT Value: the Role of Organizational Integration

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Abstract. The literature has extensively debated over the potential organizational benefits of IT resources. Researchers agree on the fact that IT resources generate value under the moderating actions of contextual organizational factors. Several studies on organizational benefits of IT resources addressed the value generation process, fewer targets the role of organizational factors in such process. This paper analyses the evidences of three cases in which IT investments failed in delivering value to the organization, identified five organizational factors (specialisation, lack of formal communication, lack of formal ownership, different reporting lines, and lack of horizontal coordination mechanisms) antecedents of organizational integration, and a process that explains how slack IT resources increase the complexity of the IT infrastructure and worsens IT managerial capabilities in a vicious circle.

Introduction

Whether IT resources create organizational value is the central question of an interdisciplinary debate which develops across different intertwined trajectories (Devaraj & Kohli, 2003; Kohli & Grover, 2008). This debate goes under the name of *IT value* (Melville, Kraemer, & Gurbaxani, 2004), and through the years provided enough evidences that IT resources produce organizational benefits (Devaraj & Kohli, 2003; Kohli & Grover, 2008; Zammuto, Griffith, Majchrzak, Dougherty, & Faraj, 2007), and that these benefits are achieved only when the

innovation potential of the technology combines with adequate organizational practices and capabilities (Zammuto et al., 2007). Organizational benefits of IT resources manifest in different ways, and are subject to context conditions that may make them latent or evanescent (Kohli & Grover, 2008; Nevo & Wade, 2010).

While the largest part of the IT value debate focuses on how to assess and measure the value produced by IT resources, few studies have focused on the role of the organizational contextual factors that mediate the realization of the prospected benefits (Nevo & Wade, 2010). IT resources interact in synergy with other organizational resources, potentially producing sustainable organizational benefits (Aral & Weill, 2007; Melville et al., 2004; Wade & Hulland, 2004). The consequences of the interaction between the IT resources and the organizational resources on the value generation process, and the knowledge of factors explaining how IT resources interact for the value generation is still limited (Aral & Weill, 2007; Nevo & Wade, 2010; Ragowsky, Stern, & Adams, 2000).

This paper aims at contributing to the debate on organizational benefits of IT resources from this perspective, by shedding light on the importance of organizational contextual factors for the achievement of organizational benefits. More specifically the paper discusses the role of organizational factors that hamper organizations possibilities to achieve value out of their IT resources. The paper is based on the analysis of three cases in which different organizations failed at achieving benefits from their IT resources. The case analysis contributes to identify five organizational factors antecedents of poor organizational integration, and a process that, through the creation of IT slacks, increases the complexity of IT infrastructure, and of its management. The paper is hence motivated by the following research question: *how do organizational factors negatively influence the IT value generation process?*

Theoretical Framework: Value Generation and IT Resources

Under a theoretical perspective, value creation in organizations takes place at all levels (Jones, 2007). In nowadays organizations IT technologies, play a potential role in the value generation process. The value capability of these resources is realized only when they interact with organizational structures, strategy, values, competition, and agents' conjectures (Pitelis, 2009). The IT resources shall be managed with governance frameworks suited for the nature of the activities performed, and for the industry in which the organization works (Campbell, McDonald, & Sethibe, 2009; Kohli & Devaraj, 2004).

IT Value Generation Process

At the theoretical level, the relationship between IT resources and organizational value is explained by the IT value generation process of Melville et al.'s (2004, p. 293) framework (see Figure 1). In the IT value generation process IT resources – both technology and human– interact with complementary organizational resources, and impact business processes. The impact on business processes is the consequence of the exploitation of IT resources innovation and transformation capabilities (Scheepers & Scheepers, 2008; Zammuto et al., 2007). The organizational benefits of the impact of IT resources on business processes is captured by improved business process performance, measured with specific key performance indicators. The improved performance at the business process level eventually leads to improved organizational performance.

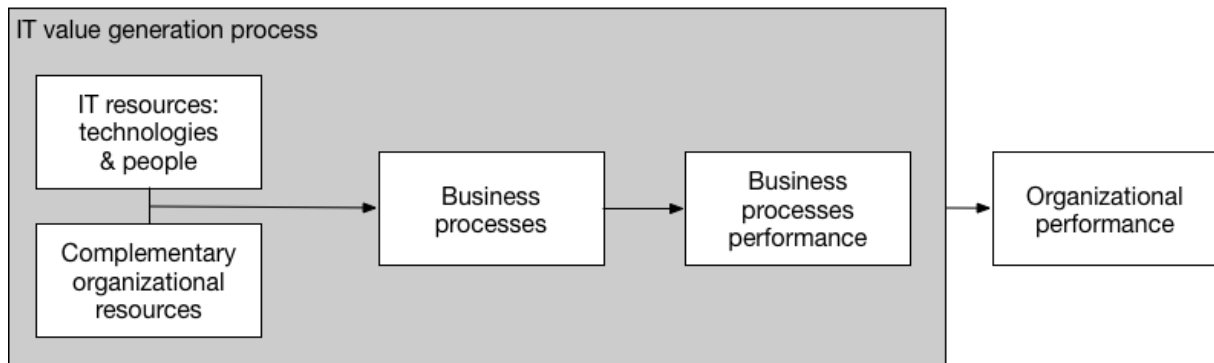


Figure 1. The IT value generation process

The kind of relationships between IT resources and complementary organizational resources is that of a synergy (Wade & Hulland, 2004). IT resources alone do not generate value, but they must interact with complementary resources, both IT and non-IT ones. These complementary organizational resources are in the form of managerial praxes, routines, policies, organizational systems, knowledge assets, relationship assets, culture, and structure (Scheepers & Scheepers, 2008, p. 26). The importance of these resources for explaining how IT generate value has been out of the focus of the literature for a long-time (Ragowsky et al., 2000), and the knowledge on how these factors influence the IT value generation process is still limited (Aral & Weill, 2007; Lee, DeLone, Tan, & Corrales, 2014; Nevo & Wade, 2010).

Organizational Design and IT Value Generation

Through the years, the complexity of IT infrastructures has increased both in terms of number, diversity, and interdependence among IT resources. The increased complexity hardens

the management of IT resources, and the IT value generation process. Identifying the contribution of IT resources to the organizational value generation is a complex undertaking (Braccini, 2011; vom Brocke, Braccini, Sonnenberg, & Spagnoletti, 2014). In modern IT infrastructures IT resources and business processes are highly interrelated. Multiple resources can impact multiple business processes with ripple effects (Scheepers & Scheepers, 2008). Such increased complexity involves also the interactions with the complementary organizational resources.

To manage this complexity, organizations tend to structure IT departments seeking labour and competence division to achieve specialisation. IT departments manage the main IT management processes through which IT delivers services to the rest of the organizational structure and contributes to the overall value generation process (Peppard, 2007). It is therefore common to find sub-units internal to the IT department each one specialised on a set of technologies, or on a set of applications.

Specialisation and Organizational Integration

Diversification is at the basis of functional specialisation, and is a design strategy used by organizations to develop key competences on which they build sustained competitive advantage (Jones, 2007). The different units shall work as a single entity, given the fact that they show different forms of interdependences (Thompson, 1967). Hence, besides specialisation, organisation shall seek to achieve also an adequate level of integration.

Organizational integration is the “process of achieving unity of effort among the various subsystems in the accomplishment of the organisation’s tasks” (Lawrence & Lorsch, 1969, p. 34). Research has found a positive relationship between integration and different measures of organizational performance (Barki & Pinsonneault, 2005; Barney, 1991; Mukhopadhyay & Kekre, 2002), hence we posit that organizational integration in IT departments potentially affects also the IT value generation process.

Integration in organisations is both internal and external (Barki & Pinsonneault, 2005), but for the needs of this research paper, the internal perspective is the only one addressed. Internal integration is in turn divided into operational and functional.

Operational integration concerns the integration of successive stages within the primary process chain or workflow of a firm (Barki & Pinsonneault, 2005). It is usually among stages which show sequential and/or reciprocal interdependences (Thompson, 1967). It requires high organizational efforts, but it eventually produces advantages in terms of productivity, competitiveness, strategic advantage, improved coordination, or reduced errors. Such

integration is achieved through the mechanisms of planning, direct supervision, standardisation of output or work, and mutual adjustment (Glouberman & Mintzberg, 2001; Mintzberg, 1979; Thompson, 1967). On the other side, operational integration is contrasted by specialisation and goal differences, and by political matters concerning power, control, and access to resources of the different units.

Functional integration concerns instead the integration of administrative and support activities with the process chain or the workflow of a firm (Barki & Pinsonneault, 2005). This integration is among units which show pooled interdependences (Thompson, 1967). Achieving functional integration requires a lower effort than that necessary for operational integration, and contributes to higher innovation rates, greater products success, and improved inter-functional synergies. Functional integration is achieved through standardisation of skills, knowledge, and norms, and contrasted by differences in specialisation and framing of the different units, and political matters power, control, or access to resources of the different units.

Research Design

The paper is based on a case study with three case units (Yin, 2011). All the three case units are firms which make use of IT resources to support their daily operations managed by specific internal organizational units. In all the three case units, the value expected from IT investments was eventually not achieved due to specific organization design choices. Moreover, the three case units are three business organizations which differ in size, in organisational design choices of the IT unit, and in business domain, but they all show a high level of information intensity in their business processes (Porter & Millar, 1985). Finally, in all the three case units the business organizations run in the past internal assessments to identify problems causing the lack of value generation, and to design solutions. This allowed the author to study both the original organizational structure and the changes produced to it.

Given these considerations the cases are relevant for the research question, and have adequate similarities (lack of value generated, relevance of IT resources in business processes) and diversities (size, structure, and domain) to support the validity and the analytical generalizability of the results of the analysis.

The researcher had access to primary and secondary sources of data to analyse the three cases. Interviewees with key organizational actors involved in the three units were the main data sources complemented by technical, financial, and managerial reports, and observations

(further details in Table 1). The data collection was aimed at reconstructing the chain of events and consequences in the three case units.

The analysis aimed at identifying the causes of the events (the organizational factors), and the process chain of cause and effect that led to the outcome (the lack of value achieved out of IT investments). The data collection and analysis were performed in an iterative way. Intermediate results of the analysis were confronted with business organization stakeholders which were called to assess the validity of the results of the research.

	Case 1	Case 2	Case 3
Primary data	Interviews with key staff members: CEO, CIO, IT team leaders, three IT team members	Interviews with key staff members: CEO, CIO, 2 IT managers	Interview with key staff members: CIO, CFO, IT controlling manager, IT portfolio manager, 2 IT infrastructure managers, IT staff members
Secondary data	Observations of software artefacts	Financial data IT assets catalogue Organizational assessment report	Financial data IT assets and service catalogue Organizational assessment report

Table 1. Data sources for the three case units

Case Contexts

For the needs of reporting the results of the analysis for this research paper, the three case units are anonymized and identified by a number. Each case context, diagnose, and solution is described in the three following sub-sections.

Unit Case 1

The unit case 1 is a high education institution which uses IT services: (i) dematerialize and control key administrative processes, and (ii) to disseminate information both to internal and external stakeholder. The IT management works in cooperation with two outsourcers. IT management responsibilities are shared by two functional units: (i) the IT department composed by a CIO and seven staff members, and (ii) the business intelligence unit composed by a team leader and two team members. The IT department oversees planning, operations, and management of organizational information systems and web based platforms, making also use of external suppliers and consultants. The business intelligence unit oversees the management of a learning content management system used by students and lecturers, and of managing the

operation and evolution of business intelligence reporting services on the data produced by information systems. The two units were under different reporting lines, under the eventual control of the CEO.

The unit case planned an IT service integration project aimed at rationalizing the internal information management with the objective of (i) updating part of the information systems infrastructure to web 2.0 and mobile technologies, (ii) rationalizing the infrastructure by reducing the number of platforms and the number of outsourcing contracts, and (iii) substituting all manual data exchange processes among the different platforms with automatic ones. Figure 2 graphically summarizes the as is scenario (left side) and the scenario to be realized at the end of the innovation process (right side).

The unit case expected benefits in the form of time savings on administrative and coordination processes, timeliness and accuracy of information dissemination through internet and intranet portals, and costs savings through the reduction of outsourcers and the consequent decommissioning of the specific system.

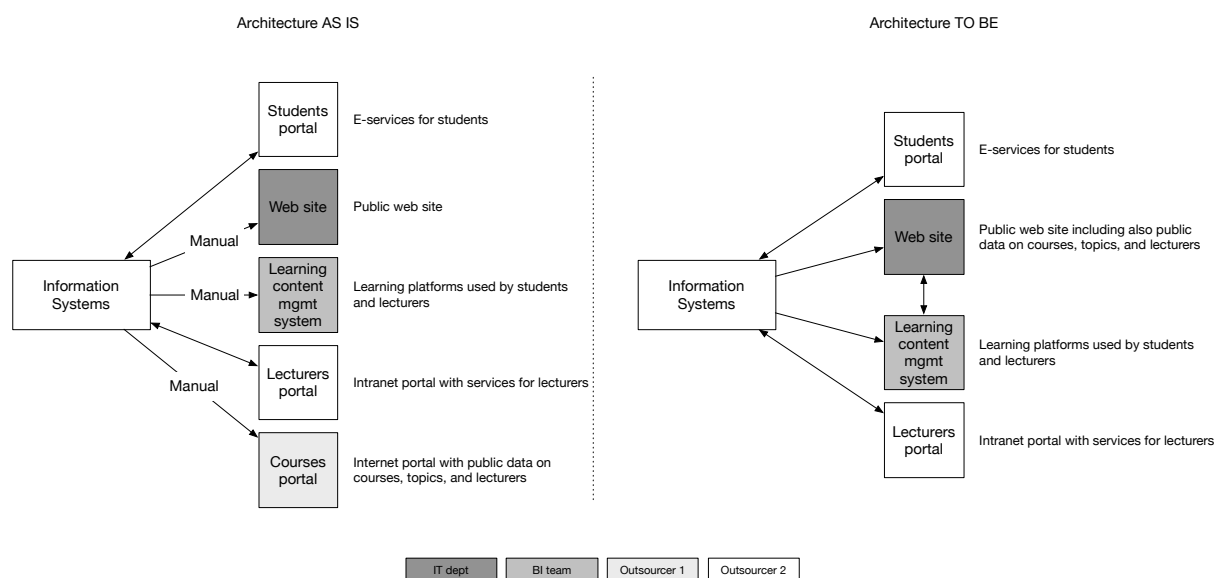


Figure 2. AS IS and TO BE of the IT infrastructure

To achieve such objectives the CEO formed a task force composed both by members of the IT department and of the business intelligence unit. The task force had to study the problem and propose a technical and operational plan to implement the designed solution if approved by the top management. The task force worked at problem analysis, but eventually the two components (IT department and business intelligence unit) worked separately for few months exploring and eventually implementing two different and incompatible prototypal solutions. None of the two solutions were formally approved by the CEO and went beyond the prototypal

phase. The workload of the two units was slowed down by the exploration effort on the prototypal solutions with delays on other activities.

After one year without results the CEO declared failed the task force mission and restructure the project by nominating a project manager in charge of managing and integrating the activities of the two groups, and directly reporting to the top management. The integration project was completed with two and half years of delay. The contract with the outsourcer 1 was renewed for one year beyond the planned decommissioning date. The courses portal was eventually decommissioned two years after the expected date. A total amount of 8 man months of work were wasted on the prototypal solutions eventually abandoned.

Unit case 2

The unit of analysis 2 is a public transportation company which uses IT services to: (i) run the organizational information systems to automatize and control organizational administrative processes, (ii) plan the transport services, and (iii) deliver the information to internal and external stakeholders. IT management responsibilities are shared by two functional units: (i) the IT department in charge of managing the IT infrastructure, the information systems, and the networking and telecommunication services; and (ii) the intelligent transport systems department in charge of managing transport planning and information dissemination services running on the IT infrastructure provided by the IT department. The units were under different reporting lines, under the indirect control of the CEO.

The unit experienced difficulties in IT investments planning and operations due to the internal bureaucratic processes necessary to approve IT assets purchase. Each IT investment involving the purchase of a piece of software or hardware had to be approved by the internal financial department, external to the two IT units. Such approval process required significant delays due to internal administrative activities. Moreover, when the assets to be purchased overpassed the financial threshold of about 20 KEuros, the organization was forced by law to run public tenders, which include extra administrative efforts and costs.

To overpass these limitations the unit decided years ago to switch to a private cloud strategy to manage their IT infrastructure and services. The expected benefits were in the form of: reduced costs for energy, facilities, and hardware maintenance, reduced administrative burden for IT assets management (including planning, operating, and maintaining). The private cloud IT infrastructure was dimensioned to sustain the IT services demand at the time of the investment plus the planned evolution over five to eight years. With the private cloud infrastructure IT resources provisioning to internal customers was the result of decision of the

IT infrastructure manager, a staff member internal to the IT department. The financial department was no longer involved in such decision making process.

Such role was assigned to a different person two and half years later as the previous IT infrastructure manager moved outside the organization. The new person entering in the role soon found that the capacity of the private cloud was close to saturation though the internal IT services demand did not change significantly in the previous years, and started to review all the IT assets usage individually supported by external experts, and under the concern of increasing costs for IT management (which summed up to about 2,5 Euro million per year back then) raised by the top management.

The assessment initiative highlighted that IT assets management was not under control in the organization. First, there was a potential duplication of IT assets across the two IT units involving about 7% of all the IT assets in use (in total 145 server). Secondly several IT assets were assigned to internal units upon request, without a clear need, and were never released when no longer needed. About 23% of IT assets were either inactive, unnecessarily shadowing other IT services, or without a clear business function. They were anyhow consuming other infrastructural services (network bandwidth, storage, and backup) increasing costs for storage, backup, and restore services by 8% each year. A total amount of 4,5 man months were considered wasted by the internal review effort of the IT asset manager.

Unit case 3

The unit of analysis is a multinational industrial private company which uses IT services to manage all the IT infrastructure and the information systems to support both operational and administrative processes, and to manage the multinational business. IT management is under the responsibility of an IT department with about 200 employees with 50% of them concentrated in the organizational headquarter, and the rest spread across five geographical locations across the globe. The largest part of the IT infrastructure (about 550 hardware assets and 200 software assets) is also located in the organizational headquarter. The IT department is under the control of a CIO, under the reporting line to the CFO.

Internally, the management of IT assets was shared by four units, all under the direct control of the CIO:

1. Unit 1: networking;
2. Unit 2: storage and backup services;
3. Unit 3: Unix servers;
4. Unit 4: Windows servers.

At the entry point of a prospected period of economic turmoil, the IT department was increasingly pushed by the financial department to plan IT asset management in advance, within an overall effort to rationalize IT expenditure first, and overall expenditures second. The IT unit had several difficulties in fulfilling the requests of the financial department. First, while the four individual units had a full view of the IT assets they were managing, that control did not include low costs assets which were bought and managed as consumable, but which eventually consumed IT infrastructure costs (network bandwidth, system storage and backup services). Secondly, all the four units had not full control of the lifecycle status of their IT assets, since technical and financial information were misaligned. Furthermore, the four teams had difficulties in communicating and coordinating for physical resources usage (mainly space in the data center rooms).

A managerial consequence of these problems was that, since the IT departments was cross-charging costs to other internal organizational units for their IT services consumption, they were not able to calculate the actual cost for each service (neither was there a stable service catalogue), nor were they able to make precise estimation of productivity increases of the IT department (measured by the reduction of costs across two different budget periods, confronting planned and actual costs) which were instead quite frequently breached.

The organization wanted to improve the internal IT assets managerial capability. The unit decided to employ a temporary project manager in charge of performing an internal innovation initiative devoted to: the set-up and cleaning of the IT asset and service lists, the alignment of IT infrastructure information across the three units, and the redesign and alignment of the IT infrastructure management processes (demand, planning, and decommission) by revising roles, tasks, and responsibilities.

At the end of the internal innovation initiative the company assessed that their suppliers forced them to pay 45% more for outsourced services compared to how much they eventually discovered they would cost for them to manage the services internally. A total cost of 3 man months were required for the alignment of the IT infrastructure management.

Case Analysis

Table 2 summarizes and confronts the details of the different case units by showing the main elements in each of the settings in terms of the type of innovative action that was put in place, the expected versus the actual benefits, the contextual factors, and the diagnoses which were identified as causes of the situations observed.

Interviewees in all the three case units reported lack of shared knowledge among the internal members of the unit necessary to sustain the IT resources management processes. The analysis showed that this was the consequence of lack of information circulation among the different units which, following their tasks and their areas of specialisation, had not time and little incentive to coordinate, neither they were forced by specific organization design choices to establish formal communication.

In two of the case units the lack of information circulation was further complicated by the presence of two functional units in charge of managing different IT resources, under two different reporting lines. In this circumstance, the cost of coordination was complicated by the need of activating the hierarchy external to the two units.

	Unit 1	Unit 2	Unit3
Action	IT platforms integration IT infrastructure simplification	Switch to virtual IT infrastructure	Specialization of IT asset management
Expected benefits	Reduced administrative efforts Improved timeliness of information dissemination Costs reduction IT infrastructure simplification	Reduced administrative efforts Increased effectiveness and flexibility of IT asset management	Effective IT asset management
Achieved results	Duplication of resources Internal competition Extra costs Extra time	Duplication of resources Extra costs Lack of control of IT assets	Excess of costs paid to suppliers Lack of control of IT assets planning
Organizational units characteristics	Horizontal differentiation Two units under two different managers (CIO & CFO)	Horizontal differentiation Two units under two different managers (CIO & CEO)	Horizontal differentiation Four units under the same manager (CIO)
Diagnosis	Lack of horizontal communication Lack of integration Privatization of shared IT resources	Lack of horizontal communication Lack of integration Poor demand management Privatization of shared IT resources	Lack of integration Lack of coordination Misalignment and mismanagement of asset data

Table 2. Summary of the three cases

Finally, in all the three case units, none of the human resources had a clear ownership of the missing integration tasks and activities. Coordination among the different sub-units was

left only to voluntary efforts (case 3), and the perception of lack of coordination was felt as a waste of resources (case 1 and 2), and was also the condition that determined the failure of the prototypal initiatives (case 1).

Such contextual conditions produced consequences that affect the capability of managing IT resources in all the three units, and wasted the organizational benefits potentially expected by the internal innovation processes. The lack of organizational integration among the units in charge of IT management stimulated a set of local praxes that led to the presence of IT resources without a clear ownership, and stemming out of IT resources shadowing and internalization praxes. With IT resources shadowing, units duplicated IT services inside the infrastructure without a clear business need (Federici & Braccini, 2012), and created IT slacks in the IT infrastructure not required by any business process, and hence not contributing to the IT value generation process.

Though potentially reusable for business purposes in case of specific needs, the IT resources in excess – mainly technical resources – contribute only to the increase of the IT infrastructure complexity. Such increased complexity is both in terms of number of resources to be managed (like for the assets in the list of case 2, the prototypal platforms and the platform to be dismissed for case 1), and in terms of increased IT resources usage as resulting from coupling among them in the IT infrastructure.

Discussion

The research question motivating this paper pointed at the identification of contextual organizational factors and on how they negatively affect the IT business value generation process. The analysis of the three case units contributed to identify five factors (technical specialisation, lack of formal communication, lack of formal ownership, different reporting lines, and lack of horizontal coordination mechanisms), all resulting in lack of organizational integration. These factors produce the conditions to create an impact on the management of IT resources, and eventually negatively affect the IT business value generation process.

More specifically specialisation creates the conditions for a strict focus of organizational units on technologies or set of resources. Specialisation is justified by organizational design choices, and functional to effective management of IT resources. However, specialisation turned out to be detrimental for the IT resources management capabilities when coupled with lack of formal communication, ownership, and lack of horizontal coordination mechanisms. All these factors together disincentivize information and knowledge exchange inside the IT

department. Finally, the presence of different reporting lines and the need to use the hierarchy as a coordination mechanism across two different functional units in charge of managing IT resources, also negatively affects the IT resources management processes.

The consequences of these contextual factors are organizational praxes in the form of IT shadowing and privatization of IT resources. Following these praxes IT assets are introduced in the IT infrastructure following a local demand management (i.e. for the need of a specific sub-unit), not associated to business processes, or unnecessarily shadowing existing IT resources. These potentially unexploited resources, not being connected to internal customers or business processes needs have a theoretical negative consequence on the IT value generation process, as they hardly contribute to the increase of business processes performance, and eventually organisational, performance. These resources remain in the IT infrastructure as technical IT slacks, improving its complexity.

Though ambivalent, the literature sees in slacks a positive potential, as organizations have the chance to exploit their capabilities in case of crisis or to react to changing needs (Anthony Byrd, Lewis, Bryan, & Byrd, 2006; Barki & Pinsonneault, 2005; Kettinger, Grover, Guha, & Segars, 1994). However, IT slack resources produce an immediate negative consequence on the management of IT resources, given their very nature. IT slacks are not only resources in excess that wait to be used in times of crisis, but while in excess, they also consume of other IT and complementary organizational resources (e.g. backup services, disaster recovery services, physical space in the data centre, energy for power and cooling), and they contribute to increase the complexity of the IT infrastructure with a vicious cycle. More IT slacks increase the IT infrastructure complexity. An increased infrastructure complexity reduces the IT managerial capabilities by increasing the chance of losing control over IT resources management. This in turns increases IT slacks.

Figure 3 visually represents the theorized mechanism identified at the end of the case unit analysis. The results were discussed with practitioners in the organization, and with IT and non IT executives and experts.

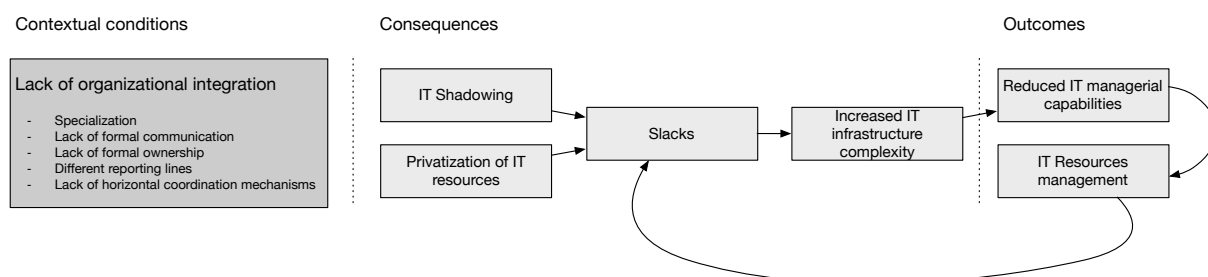


Figure 3. Production of IT slacks and IT managerial capabilities

Implications for Research

The results of this work suggest implications for furthering the debate on organizational benefits of IT resources. From the research side the work sheds light on the impact of organizational factors on the IT value generation process identifying factors that denote lack of organisational integration, and that enact a vicious cycle that hampers value generation. Out of the three units of analysis, unit 1 and 2 belong to the public sector, while unit 3 to the private sector. While observations are consistent through the units, they anyhow differ in terms of value creation logic (i.e. public versus private value). Hence a research implication would be of investigating specifically to what extent IT slack resources are detrimental for the IT value generation process given the underpinning public and private value logic.

A second implications for research concerns instead the interdependences among IT resources. Technical IT resources are not to be seen as individual assets, but as set of systems of resources (Scheepers & Scheepers, 2008; vom Brocke et al., 2014). While many of these resources are independent among each other, others are coupled in sets by technical reasons. As a matter of example, an IT platform using web technologies may require a server and a storage, it may need a database server – in turn needing also storage – uses backup and disaster recovery services, consumes physical space in the data centre, and produces costs for energy and cooling. Such set of IT resources impacts also human resources which are responsible for the technical and financial management (e.g. the web server, the storage system, the backup policy, the disaster recovery services). Shadowing such an IT platform implies more than shadowing just one resource but the whole set, and impacting the operational IT managerial tasks of more than one human resource (e.g. server manager, storage manager, backup and disaster recovery manager). It is known that the relationship between IT resources and business processes is a complex one (Scheepers & Scheepers, 2008). However, we believe that further light needs to be shared on the consequences of the interdependences among technical and human IT resources. Furthermore, considering that nowadays IT resources take on the execution of part or entire business processes, such study shall also consider the consequences of the interdependences among the different activities (Thompson, 1967), and the interdependences among the different IT resources in use.

Implications for Managers

Concerning IT management, and the design of IT departments, an immediate consequence of the work presented here is the need to establish formal horizontal coordination

and communication mechanisms, and to establish clear responsibilities on the coordination tasks, and a clear ownership on the alignment process or artefact.

An adequate level of attention should be raised towards the creation of slack resources which IT management shall always track and put under control, also with forms of authorization to the creation of the slacks themselves. This is particularly stressed in the analysis of unit case 2, where the switch to a different strategy for managing the IT department reduced the organizational burden for IT assets purchase decision making, but at the same time left open the possibility for slacks to be introduced in the organization when internal customers' needs for IT assets is not managed. While it is out of doubt that the design chosen in the case afforded improved organizational flexibility, it also produced lack of control over the evolution of IT resources.

Concluding Remarks

This paper contributes to the IT value debate by shedding light on the consequences of contextual organizational factors on the IT value generation process. Following the research question, the paper identifies how five factors (specialization, lack of formal communication, lack of formal ownership, different reporting lines, and lack of horizontal coordination mechanisms), all showing a lack of organizational integration, contributes to the enactment of a vicious circle that through the creation of IT slacks, increases complexity of IT infrastructures and worsens the management of IT resources. Such cycle introduces in the IT infrastructure resources that are not associated to any business process, hence do not contribute to the IT value generation process.

The contribution of this paper is based on the analysis of three case units. The research presented here is limited on the identification of factors negatively affecting the IT business value generation process. However, the result of this research do not mean that the five identified factors are the only ones that create the conditions for the enactment of the vicious circle. Researchers and managers shall be aware that further factors, not investigated here, may still create the conditions to produce the same negative effects on the IT value generation process described in the paper. Finally, the paper does not inform on the factors positively influence the IT value generation process.

Given the contribution and the limitations, the paper leaves room for further studies to investigate the role of other organizational factors, and on the consequences – both positive and negative – of different combinations of these factors.

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