Making the Most of IT Governance Software: Understanding Implementation Processes

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Abstract

Why are many information technology (IT) governance software implementations challenged and what are the critical success factors (CSFs) for the rollouts? This question has recently gained importance, since IT governance is high on the corporate agenda and software applications have become available which promise to enforce and streamline IT governance mechanisms. However, early research has shown some of the difficulties surrounding the implementations of theses tools. This article presents and discusses several implementation case studies based on a comprehensive research framework, and concludes with a discussion of implementation practices. It can be seen that three major factors can overcome most common failure point: careful project planning, top management support, and tight organizational integration.[*]

1. Introduction and Research Question

When one of our case study companies, a U.S. based allied and health services company, embarked on a wide-reaching IT governance initiative the future looked bright. The vice president in charge of the department "strategy and governance" set out to tackle inconsistent project, portfolio, and demand management processes through the implementation of IT governance software with modules for portfolio management, program management, and performance monitoring. The application should help to "manage [IT] like a business both financially and administratively" through transparent labor charges, budget processes, and IT spending analyses.

After an 18 month rollout - and after spending $4.0m on automating and digitizing IT governance processes - the implementation of the modules portfolio management and program management was regarded a failure. Limited design efforts, lacking integration with IT/business processes, as well as insufficient pilot testing and end user training were seen as major reasons for failure. The use of the IT governance software had never been made mandatory and clearly had not been able to "sell itself". After much consideration the health and allied services company decided to try again and re-implement the two software modules. A common fate of many IT governance software implementations?

Academic research and the trade press confirm that this firm's experience is no isolated case: large investments in money and time are often spent just to pull the wrong levers [1, 2]. Implementations are neither always easy, nor are IT governance concepts and tools readily embraced [3]. Meyer [4] claims that the results of many IT governance initiatives are "often bureaucratic, imposing oversight and convoluted approval processes on already burdened organizations. These heavy-handed top-down controls squelch entrepreneurship, bog organizations down, and drive administrative costs up."

While the challenge is now well understood, IT specialists and managers still lack guidance for taking it on. They miss implementation frameworks and guidelines for overcoming obstacles. Selecting an appropriate mix of change interventions remains trial-and-error learning. Our research is aimed at filling a gap in the IT implementation and IT governance literature by exploring success and failure of IT governance tool implementations. Incorporating the above academic and managerial implications, the general research question is derived: "Why are many IT governance software implementations challenged and what are typical CSFs for the rollouts?"

The remainder of this paper is organized into five sections. In the following section "conceptual foundations and framework" earlier research relevant to the research question is assessed and synthesized in an overall factor model. The third section "research methodology" includes the selection of case study sites, as well as describes the data collection and analysis approach taken. The fourth section "case studies and discussion" presents observations and findings from

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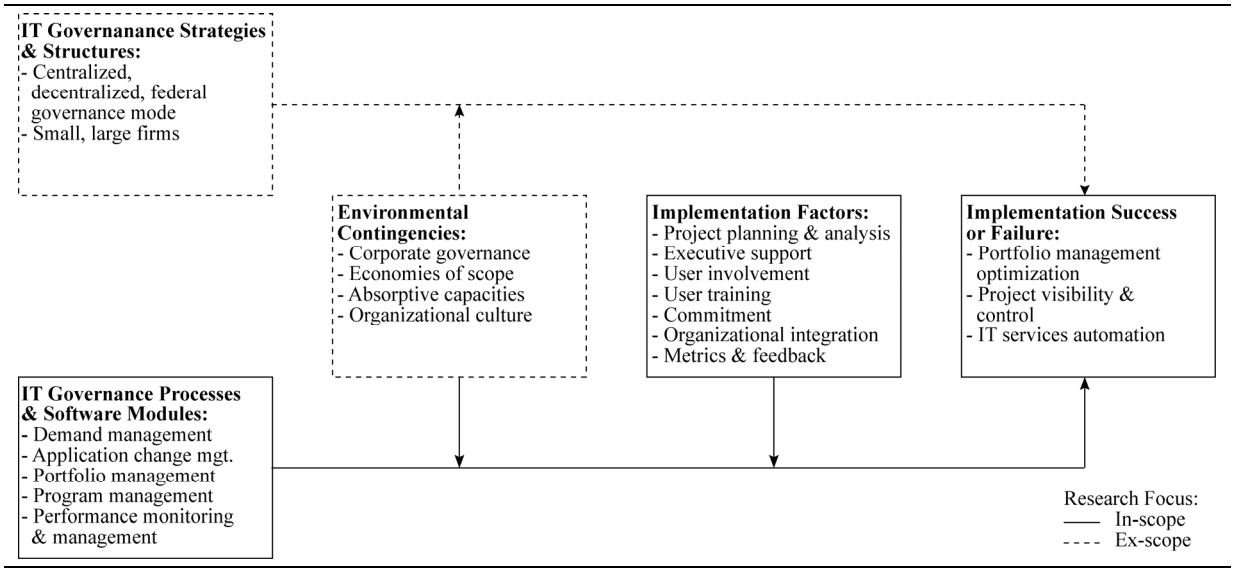

Figure 1. Research Framework

four international sites which have implemented IT governance applications. The paper closes with an overview of the next research steps in the final section "conclusion and further research".

2. Conceptual Foundations and Framework

2.1. Research Framework Introduction

This study is situated at the nexus of research on IT governance and IT implementation projects; hence it builds on and integrates both streams of research.

According to Myers [6], the term "implementation" is used in three distinct ways: "implementation as coding" takes the most narrow perspective, it only comprises the realization of systems in hardware and software; "implementation as a step in the systems development life cycle" refers to all activities involved in introducing IT to an organization at a certain stage of development; lastly, "implementation as the successful use of information technology by an organization" equates implementation with the entire systems development process [7]. Following Lucas [8] and Zmud and Cox [9], our explorative approach adopts the latter broad understanding.

Congruent with Korac-Kakabadse and Kakabadse [10] we define IT governance as the set of enabling mechanisms to request, prioritize, sponsor, fund, monitor, and enforce IT investment decisions. This study aims at a better understanding of IT governance software implementation projects and explores the factors which influence success and failure. Figure 1 depicts our conceptual research framework in the context of earlier research we have done on IT governance [1]. For this current study we focus on IT governance processes and software modules, as well as on implementation factors and measures of implementation success (or failure). IT governance structures and environmental contingencies are addressed but outside the scope of this study.

IT governance strategies and structures - the first building block - addresses the choice between centralized, decentralized, or federal IT governance arrangements [11, 12]. Those require an appropriate allocation of responsibilities, e.g. for business applications, infrastructure services, IT architecture, and technology platforms [13, 14]. The "structural" IT governance choices are of course relevant for the overall result of IT governance initiatives but for the purpose of exploring CSFs for tool implementations they can be seen as separate and can be assumed as a given, a choice made by the organization prior to the rollout.

Centralized IT governance structures allocate decision-making responsibilities to a central IT function. Benefits of increased coordination and control are offset by more bureaucracy and less responsiveness to business demands. Decentralized IT governance structures delegate most decision authorities to business unit managers; however, the flexibility suited for turbulent environments must be balanced with standardization tradeoffs. A federal IT governance structures maintains central control of some IT domains - typically shared infrastructures and architectural standards - while business units can deploy business applications at their discretion [15].

IT governance processes and software modules - the second building block - comprise the design of governance workflows and tools for digitization and automation. IT governance software packages emerged over the last ten years with Alfabet Meta-Modeling, Computer Associates, Compuware, IBM, Mercury Interactive, and PlanView as currently dominant market players [42]. Most application packages cover the entire IT investment lifecycle from requesting to retiring IT solutions. Vendors promise that the tools will drive out costs in "keep-the-lights-on" IT activities while at the same time ensure the delivery of strategic innovations.

IT governance applications also offer monitoring features to ensure that agreed-upon mechanisms are followed. Workflows automatically route decisions and needed input to process participants; exceptions and delays are escalated when reaching a threshold [43]. As strategic capabilities, software modules offer portfolio management and program management functionalities [16-18]. As operational capabilities, demand management and application change management modules ensure that the development of strategic IT initiatives is complemented with efficient day-to-day IT service delivery and routine application changes [17, 19]. Performance monitoring and executive dashboards complement the above capabilities [20, 21].

Environmental contingencies - the third building block - comprises a range of environmental influences, including cultural diversity, mergers and alliances, intensifying competition, fluctuating economic conditions, new sourcing opportunities, business transformations, and rapid technological progress [11, 22-24]. As a result, IT governance arrangements must become increasingly complex [25, 26]. While we acknowledge the impact of environmental contingencies [15], they are not the focus of the explorative stage of our research.

Implementation success or failure - the fourth building block - employs the proven categories portfolio management optimization, project visibility and control, and IT services automation [1]. Portfolio management optimization comprises evidence that IT-enabled portfolio management processes leads to improved alignment between business and IT, to better executive decision-making, as well as to monetary savings through revised investment decisions and repurposed capital investments. IT governance applications bring the same set of IT evaluation metrics and methods to each proposed initiative. Repurposed capital investments can free-up up cash for other strategic initiatives.

Project visibility and control includes a higher capability maturity level (CMM), as well as increases in healthy projects, better "on-budget" and "on-time" performance, and reduced project management costs as a percentage of project costs. IT services automation comprises the quality of audit and regulatory compliance and the reduction of overall operational IT spending as a percentage of revenues. Higher productivity and lower IT personnel costs might go hand-in-hand with working time reductions though faster incident handling and deployment of application changes. The fifth and last building block - *implementation factors* - will be discussed in detail in the subsequent section.

2.2. Implementation Factor Overview

Our review of the IT implementation literature of the past 30 years - including the more recent IT governance software implementation research - has identified a series of implementation factors, issues and themes. We have clustered these into seven overall implementation factors which we propose and depict in the fifth and last of figure 1's building blocks: project planning & analysis (PPA), executive support (ESU), user involvement (UIN), user training (UTR), commitment (COM), organizational integration (OIN), as well as metrics and feedback (MFE). Each factor is discussed below, linking it to both established IT implementation literature as well as to relevant research from the field of IT governance.

- PPA suggests that a detailed plan of the required steps in the implementation process needs to be developed at the outset, including all resource requirements. The pre-implementation situation, current IT governance arrangements, and affected stakeholders need to be carefully analyzed and challenged [27-29]. Checking the firm's strategic objectives and business needs upfront - "prior to selecting technologies and how they will be applied cannot be overlooked [30]." Keen [31] points out that it is important to invest substantial time and effort in early project stages, where objectives are made operational and the configuration of the tool is planned by breaking it down into clear implementation steps.
- ESU comprises executive participation - i.e. activities or substantive personal interventions in the management of IT - and executive involvement as a psychological state "reflecting the degree of importance placed on information technology" [32]. Most IT governance initiatives involve a high degree of cross-stakeholder collaboration and power

reallocations: they break open the prevailing status quo and require significant changes of processes and responsibilities. Key executives can support these transformations through sufficient "air cover" [5]: communicating a compelling vision for the IT governance initiative and allocating of non-routine resources [7, 33, 34]. This in line with findings by Gartner [5] who identify three common failure points. First, inadequate participation by business management which are prone to consider IT governance initiatives as pure IT efforts and to deny the priority and support required. Second, a lack of clearly defined goals leaves stakeholders wondering why it is in their interest to participate - often paying mere lip service to rollout efforts. Unclear governance processes are the third and last impediment. To succeed, IT governance processes ought to take into account an organization's decision-making styles, responsibilities, and expected deliverables.

- UIN mandates the participative configuration or customization of the selected software and rollout approach. Levasseur [35] points out that the "active participation by the affected parties in the change process is the most important element of effective change". A lack of effective communication and involvement creates barriers which cannot be scaled in later stages. Reconsidering earlier findings, Ginzberg [27] departs from the conventional ideas regarding user involvement as a means to foster a sense of ownership and to increase the assessment of system requirements' quality [7]. Rather, users should be involved so that they can form realistic expectations about the IS.
- UTR involves formal and informal training, practice fields, as well as support groups of people experiencing similar difficulties, e.g. user champions. Training entails explaining the scope of the IT governance initiative and its relation to the organization, as well as to the environmental contingencies [36]. It should be no second guess at the end of an IT governance software rollout - persuasive, sustained education should already be considered in early implementation stages [33]. All users must understand IT governance software's capabilities and appreciate how it differs from other tools and processes with which they have already become familiar [37].
- COM comprises two elements which are common themes in earlier IT implementation research [7, 38]. "Commitment to change" describes the willingness to accommodate changes in behavior, procedures, etc. which are necessary for IS to work. "Commitment to the project" pertains to a more direct commitment of managers and users. They must ensure a smooth systems requirements assessment at pre-design, followed by a post-implementation check whether the IS meets all specifications. Successful rollouts require both personal commitment and action from managers and users, as well as organizational commitment; alone neither is sufficient.
- OIN mandates that the IT governance software rollouts are no isolated efforts. They ought to be aligned with an organization's strategic focus and business drivers [36, 37]. The factor further mandates to embed the tool in its organizational context (i.e. structures and processes) so that it will stay alive when the project team is disbanded and when consultants leave the scene. At project conclusion, users should finally assume ownership and responsibility for the tool's maintenance and evolution [29, 31]. Helpful is shifting some project team members into a support unit to make the best use of the skills acquired [33, 36]. Peterson [39] even distinguishes between four different IT governance integration strategies: relational integration structures, relational integration processes, formal integration structures, and formal integration processes - the last one of course the most important for process-automation tools. For those, a tight integration with budgeting, pricing, prioritization, project approval, and monitoring processes is key [4]. Gerrard [5] claims that a lack of clearly defined IT governance mechanisms is a major point of failure: "there must be clear, practical IT governance processes that recognize the decision-making style, culture, and practices of the enterprise and identify action steps, roles, responsibilities, and final and intermediate deliverables."
- MFE postulates that all parties concerned with the IT governance implementation project should regularly review its status and make suggestions and corrections through formal feedback channels or review meetings. In addition, the project team should establish a set of project-related KPIs for continuous progress, issue, and risk monitoring [34]. Metric data should frequently be made available to project management to allow for early corrective actions in order to increase the probability of successful project completion and to ensure user satisfaction [40]. The performance measures for redesigned - and automated - IT governance processes should be consistent with the firm's long-term strategic goals, not just with short-term results.

Though anecdotal evidence suggest that the design of effective IT governance processes, the selection of appropriate software modules, and consideration of the right implementation CSFs can create business value, much of this research is based on incomplete empirical evidence and has limited methodological rigor [41]. Even if we can accept the limited existing empirical evidence for the link between automated IT governance processes and increased business value of IT, we still need to investigate the moderating influence of implementation factors on the implementation and utilization of IT governance applications and implementation success or failure.

3. Research Methodology

Our literature review, summarized in the previous section, and findings from secondary data - provided by consulting projects and application vendors - allowed us to build a research framework [42] and state the exploratory study's purpose, as well as criteria to judge a successful exploration [43]. We posit that a multiple case research approach is suitable to examine the complex, contextual, and contemporary nature of IT governance software rollouts. As Yin [43] states, "[a] case study is an empirical enquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident."

This clearly applies to our research question, since research in this area is in its early, formative stages, and we are dealing with practice-based problems where the actor's experiences and the action context are critical [44, 45]. From early 2005 until mid 2006, we have conducted four in-depth case studies in Europe and the U.S. to gather data - through document analysis (e.g., financial reports, budgets and project data), semi-structured interviews, and direct observation. The triangulation has allowed to cross-check emerging concepts [46]. We have completed the exploratory research and conducted four case studies in diverse geographies and industries, with different IT strategies and IT governance designs.

A total of 20 semi-structured interviews have been conducted with key IT governance stakeholders, lasting for 1.5 hours on average. To support the data analysis activities - and following the advice of Darke et al. [47], Myers [48], and Weitzman and Miles [49] - we have employed a special-purpose software tool for qualitative research, i.e. QSR NVivo. The widely used software package supports non-numerical, unstructured data indexing, searching, and theorizing. NVivo facilitates the storage, coding, retrieval, and analysis of textual data, as well as theory-testing [50]. It supports case study research with its capacity to integrate mixed research methods by merging quantitative and qualitative data [51].

We have examined corporate documentation, field notes, and interview protocols with the help of the QSR Nvivo which has performed a categorical analysis of the information. Free-form significance/textual units from the transcripts have been placed into conceptual categories (nodes in a tree structure), derived from chapter two's theoretical foundations. The tree structure is a simple organizing system that enables more efficient database interrogation and flexible restructurings at any time. Deductively, all categories have been grouped and mapped to the implementation factors presented above: PPA, ESU, UIN, UTR, COM, OIN, and MFE. Figure 2 includes a screenshot of the factor mapping we have done with the tool.

4. Case Studies and Discussion

We have explored the impact of our proposed implementation factors at four implementation sites - each having implemented particular modules of IT governance with different degrees of success. Our analysis indicates that the rollouts of IT governance applications are dependent on a set of CSFs which are largely but not totally common to more traditional IT implementations.

Case 1 - Gas and Other Services Company. At the time of our research, this company was in the middle of a corporate-wide IT restructuring program, with the goal to improve the alignment of business and IT to further future competitiveness. The company implemented tools for demand and change management for Enterprise Resource Planning (ERP) applications. Due to the fact that the company-wide transformation project was initiated from the business side - not by the IT functions - the associated projects received a high level of ESU.

The rollout was supported by multiple measures of user information, involvement, and training. In addition, the project team did its best to back and enforce the redesigned IT governance processes and tools. After six month of implementation, the project was regarded as success. Staff reported a reduction of administration effort by 30% to 40% and improved audit trail compliance. Stakeholders describe the tool as being "at the pulse of time" and "the first tool that really integrates".

High user COM could be observed already in early project stages. The company's rapid growth went hand-in-hand with exploding data storage demands;

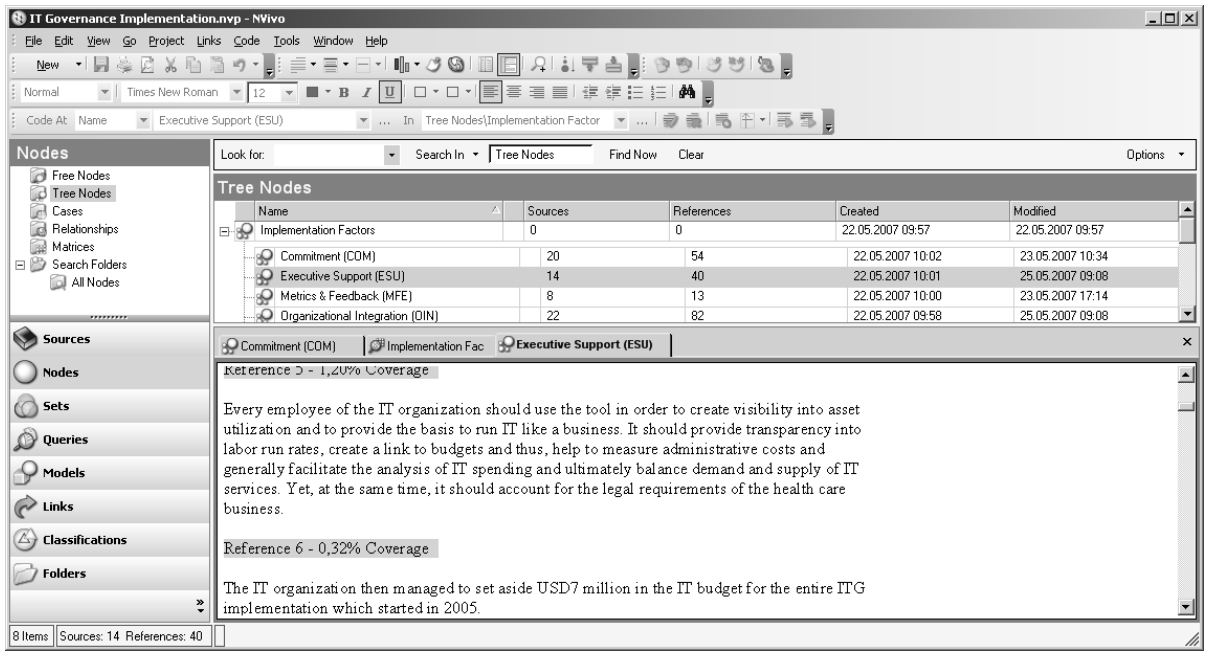

Figure 2. QSR NVivo Screenshot

regulatory compliance put additional demands on the storage and traceability of inventory. For the majority of IT employees - and many stakeholders from the business side - it became evident that a multitude of spreadsheet solutions needed to be replaced by more sophisticated tools. The gas and other services company consequently emphasized the purpose of the new processes and systems, as well as the expected benefits. Users were encouraged to explore the tools and bring forward ideas for improvements which would be considered in subsequent releases.

PPA is another implementation factor with multiple occurrences in during the rollout. All implementation efforts were conducted in a staged approach over a one-year timeframe. Two months were spent upfront for IT Infrastructure Library (ITIL) research and process definition (the company also received an ITIL certification during this phase). The company later described this phase as most important for the project's success (quoting: "it is never too early to start with the process design"). Three more months were spent with a consulting firm on evaluation, configuration, and implementation of the tool.

There is little information regarding MFE during the IT governance software implementation. However, high levels of PPA and UIN indicate that project progress was tracked and that feedback was incorporated in the process. Involving end users was regarded as crucial by the executives in charge of the IT governance initiative. From the outset, employees on all levels helped to specify requirements and objectives for the tool implementations. A company-wide campaign - advertising IT's new role in the organization - gave IT customers the opportunity not only to receive information, but to give feedback. It was clearly communicated that everyone would benefit from the new tool.

In order to gain acceptance for the tool and to ensure a fluent rollout, the company placed emphasis on UTR. Over three weeks, users were split into multiple groups and received role-based introductions to the IT governance tool. According to key stakeholders the subsequent go-live directly after training further reduced the risk of implementation failure. Strong evidence was also found for OIN factors, e.g. detailed process definitions, tight integration of the IT governance software in firm's IT landscape, as well as making the system mandatory when all rollout activities were concluded. Project sponsors stated that "[a tool] cannot replace the proper introduction of processes, but what a tool can do is support the enforcement of the processes".

The gas and other services company perceived the implementation of the first two modules as successful. Project visibility and control improved, as well as IT service efficiency. With the exception of MFE, we have seen evidence of most proposed implementation factors.

Case 2 - Health and Allied Services Company. The major international provider of healthcare products -

based in the U.S. - had followed an aggressive growth strategy through acquisitions in the past. In order to leverage synergies from acquisitions, the company announced in 2004 a corporate-wide restructuring program, which also comprised the installation of an IT governance tool for portfolio, project, and time management. The goal was to consolidate the application development activities by "reducing the IT footprint and deliver more". At the time of the research the company deployed almost 1,000 different applications and aimed at a significantly reduction to around 300 different applications.

In six months in 2005, the company implemented functionality for program, portfolio, and time management in a phased approach. The initial implementation of program and portfolio management features failed while the implementation of time management succeeded with some challenges. Up to that point in time, the IT department's first priority was - regardless of costs - to keep up with business demand. With the new focus on synergies, IT operations had to change significantly. However, despite the fact that the company-wide program put pressure on the IT department, there was limited evidence for ESU as there were for example no process owners for the project and portfolio management modules.

Referring to the role of IT within the company, IT personnel emphasized that IT rather had a "backseat position" and followed strategy as a "necessary evil". There was also very little general COM to the rollout. Since some of the newly collected data was not used in a meaningful way - necessary interfaces were missing - it left users constantly questioning the purpose of the IT governance software's implementation. There was only some motivation to consolidate business processes and tools for demand and time management for a better alignment with business needs.

Some interview partner statements also point out an insufficient degree of PPA. According to project staff the company "underestimated the importance of the design process" which lead to a disconnection of the tool and the company processes. Again, there was limited information for MFE during the implementation process; employees stated that "no targets for savings were defined and also potential benefits were and remain somewhat unclear". During the time management module's implementation it became evident that important design elements were missing and required additional rollout effort.

Also there was no evidence of UIN measures during the implementation. Looking back some users concluded that "we need to sit down and discuss how we are going to manage ourselves". UTR followed different approaches - dependent on the modules selected - and had mixed degrees of success. The training for project and portfolio management was described as a "rushed exercise" by its users. It was only focused on the tool; not on underlying business processes. After the training people still described the graphical user interface (GUI) still as non-intuitive and missed certain information.

In contrast, the training for time management - comprising a much higher number of users - was regarded a success. The trainer explained reasons for the tool rollout and provided basic guidance on how to use the tool including reference cards. The two instances on UTR indicate the causal linkage between user education/training and implementation success or failure - in line with accepted IT implementation research [33, 36, 37]. The design phase was short and there were no dedicated process managers in place. There were no defined targets for savings or potential benefits. Though the company made use off external consultants, stakeholders remarked that "[they] just screwed in the tool". Consequently only limited evidence for OIN-related measures was found.

Since only the IT department - and not the business side - was using the tool, much process work was handled via spreadsheet applications. Inconsistent business processes remained throughout the organization and it was sometimes unclear which information was collected and monitored. Employees could not be sure about data quality and integrity. Additionally, the IT governance software's use was not enforced - there were no consequences if employees stuck to their old tools.

Despite some implementation setbacks the company was motivated to re-implement the program and portfolio management functionality in the near future. Project stakeholders pointed out three key learning from the past implementation, which reflect the factors COM, ESU, and MFE: "a motivational structure must be established, a strong group of management must support the initiative and show commitment, and it has to be clarified how much value the tool will contribute to administration and especially to the users".

Case 3 - Management Services Company. The subsidiary of a U.S.-based professional services company provided application maintenance and outsourcing services for the North American energy industry. 200 professionals served clients on application management, application service provision (ASP), as well as on design, build, run, and operate activities. Since its customers expected mature processes with Key Performance Indicators (KPIs), as well as in order to gain better visibility into IT request

lifecycles and to streamline development processes the company started an IT governance initiative in 2001. By then tools were no mature solutions - but the organization was happy to act as early adopter and drive further development.

Starting in 2001 the company deployed demand, project, program, and performance management in multiple phases. Compared to other implementation sites in scope of this research, there was major evidence for ESU. IT services were at the very core of the company's business model and thus the tool usage was fully backed by the entire management. PPA was also highlighted in many interviews. The team considered it important to carefully define processes, to select the implementation order of specific modules, to conduct the go-live, and finally to train users. The affected stakeholders deemed this approach successful.

Again little evidence was found for MFE. During the implementation several occurrences of UIN became visible. The tool selection was to some extend driven by those who were actually using the tool. Due to its low maturity stage, the company could further drive the IT governance software's development and offer suggestions for adding further functionality. A time management module was developed and implemented in this way. This might have also added to the COM of the implementation staff and the users which strongly "believed in the product and the positive impacts in daily operations".

UTR was conducted in multiple user groups based on the further role concept which also specified the required skill set. Even before the education sessions were conducted, the management services company's employees had advanced IT and service management knowledge which positively impacted the rollout approach. Initial trainings lasted for several months and outcomes were regarded positively. At the end of our case study, only limited effort was needed to get new employees "up and running".

Case study facts and observations showed strong evidence for the OIN implementation factor. The service management-specific workflows were successfully built into the tool and its usage enforced by executives. Project stakeholders highlighted the enforcement of processes and the fact that "users are enforced to use the system […] because there is simply no way around it". The company's role as early adaptor and development partner for the software vendor could also have had a positive influence on the good alignment of processes and software module. The organizational context of the outsourcing provider and the very nature of the tool (i.e. the functionality to digitize and automate processes with multiple stakeholders) were a good fit.

Case 4 - Sporting and Athletic Goods Company. As one of the largest players in its industry, the international sporting and athletics good company was pursuing an aggressive growth strategy. After a series of acquisitions and divestitures, the company was facing fragmentation of its system landscape. As employees stated "it became obvious that the [IT department] would have to undergo a significant transformation to realize their vision of effective IT governance". A large investment program was started with the goal to harmonize the most important IT systems of major subsidiaries.

In this context, the IT department was looking for a tool to formalize project and portfolio management processes, as well as to provide a transparent view on project-related data via dashboard functionality. The tool rollout was divided in two stages, first the decommissioning of existing applications - e.g. for time reporting - second the geographic rollout in multiple countries. The company discovered multiple obstacles during the implementation of change, demand, and portfolio management modules. After 1.5 years rollout activities were stopped, because the financial management module failed.

Being a marketing-driven company, the IT department was struggling with a lack of IT project prioritization effort from the business side. This translated into limited occurrences of ESU for the IT governance software rollout. The program manager found it "difficult to sell internal IT projects with 'soft' benefits". There was also little evidence of COM from designated tool users. Only in departments and organizational functions where no tool was previously employed, the acceptance of the new software was regarded "ok". When other tools were already in place, acceptance was "not good".

The tool selection already gave evidence for poor PPA and limited MFE; project team members described the software selection "based rather on motivation than evaluation". The implementation sequence of specific modules was decided by urgent needs and resource availability - not aligned to the software's implementation guidelines. Project stakeholders described a "lack of skilled consulting and a lack of experience". For the deployment, no comprehensive piloting approach was used. Consequently the implementation of the first module failed and needed to be repeated; the implementation of other modules was cancelled.

Instances of UIN were neither found in the project documentation we have analyzed, nor observed at the

Implementation Factor: / Company:	Project Pl. & Analysis (PPA)	Executive Support (ESU)	User Involvement (UIN)	User Training (UTR)	Commitment (COM)	Organization. Integration (OIN)	Metrics & Feedback (MFE)
Gas and Other Services Combined	++	+	++	++	++	++	O
Health and Allied Services	+	O	O	+	O	O	O
Management Services	++	++	+	++	++	++	O
Sporting and Athletic Goods	O	O	O	+	+	+	O

Legend: (o) minor evidence; (+) medium evidence; (++) strong evidence.

Table 2. Overview of Implementation Factor Evidence

implementation site. It appears that the advantages of the new tool were not articulated to designated users and people complained about constant retraining efforts and the need to use "a new tool for the same process". OIN showed also room for improvement - only limited effort was put into process design and mapping. Some business departments failed to deliver defined processes at all. Operational experience revealed that people used hidden shortcuts and used the tool only for project approval rather then for demand prioritization.

5. Conclusion and Further Research

Comparing the findings of the four case studies, there is evidence that the proposed implementation factors influence success or failure of IT governance software implementation projects. The cases 2 - health and allied services company - and 4 - sporting and athletic goods company - show major deficiencies, e.g. regarding PPA and UIN. In both scenarios implementation failed to some extent. Cases 1 - gas and other services company - and 3 - management services company - showed careful attention to most implementation factors, particularly towards PPM and UIN and were regarded successful both from the IT and the business perspective.

As can be seen in table 2, little evidence was found for the implementation factor MFE, suggesting that it should not be included in further research. We found a correlation between PPA and OIN that has been recognized before by other researchers [28]: "it turns out that the understanding of business needs by the IT staff is a key driver of alignment" - i.e. effort spent on PPA translates into improved OIN.

To sum up, our case studies provide evidence that the six remaining implementation factors PPA, ESU, UIN, UTR, COM, and OIN can serve as a priori explanations of implementation success or failure. Particularly PPA, ESU, and OIN are powerful measures to overcome common failure points: lack of managerial support, missing objectives for the tool rollout, unclear processes designs, and starting too rapidly with a too big implementation scope [5, 52].

As a next research step we will conduct a questionnaire-based quantitative survey with a larger cross-sectional sample. This would provide a better understanding of the cause and effect relationships between implementation factors and rollout success or failure. Given the recent adoption of IT-enabled governance processes, such a research approach would be valuable to academic and practitioner communities.

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