Abstract

Despite decades of heavy investments in information technology (IT) and information systems (IS) in government systems and considerable amounts of research on how IS contributes to organizational performance and success, IS investments are still considered risky business. Fewer than 50% of IS projects deliver the expected functionality on time and on budget. As the world becomes increasingly more complex, IS increasingly needs to function across organizational boundaries. The added complexity is likely to add to the risks of IS investments. Hence, there is a need to improve practice and to increase the success rate of IS investments, especially in government settings. To address this fundamental issue, we carried out a case study. Two strands of theoretical literature guided the study, namely benefits management and co-creation of IT value. Our contributions include a novel theoretically grounded and empirically validated approach for co-realization of IT value in collaborative settings.

1. Introduction

Over the past decades organizations have invested heavily in information technology and information systems to support and improve operations. Much inspired by industry’s success with e-business in the 1990-ies, governments started adopting Internet technologies to enable citizen self service and substantial internal transformations. This new wave of government IT investments are often referred to as e-government.

Despite massive worldwide investments in e-government, the presumed benefits are increasingly debated both by policy makers, government managers and researchers [1]. Few studies documenting the benefits of e-government exist whereas there is no shortage of documented failures. This puts policy makers and public managers at a marked disadvantage when promoting the need for further investments, as the use of public funds requires solid justification. In response to this situation, there is an increasing focus on documenting benefits from e-government efforts and implementing practices that facilitate the realization of value.

The purpose of the study was to examine the nature and impact of an existing practice for benefits realization (BR) in an e-government interoperability setting with the intent of intervening with practice to improve operations and derive a set of design principles for BR practices in e-government interoperability settings. The following research question guided the research: How should organizations operate to ensure realization of benefits in contexts involving or demanding inter-organizational collaboration?

The study offers solutions to the well-known challenges of realizing value from IS investments through its theoretical contributions. Following Gregor’s [2] account of the nature of theory in IS research, our research problem suggests that there is a need to expand the base of prescriptive theory. However, our resulting theory goes beyond prescription (e.g., analysis, description and explanation).

The remainder of the paper is organized as follows. First, we review relevant literature in the areas of IS success and benefits management. Then we present and justify our choice of research approach. Third, we present an integrated process model for co-created benefits realization. Fourth, we present our research approach and case setting. Finally, we present and discuss contributions in three domains through a theoretically grounded approach to benefits management in complex IS settings.

2. Literature review

2.1 Co-creation of IT value

While IT value has historically been created within single organizations, the IS community is increasingly acknowledging that IT value is better created through
the collaboration of organizations. Sarker et al. [3] argue that modern organizations are opting for joint creation of value with a variety of stakeholders. Studying an ERP vendor and its partners, they articulated factors leading to the value co-creation in B2B alliances. These factors were: alliance governance, technology related collective strengths, power and politics-enabling conditions, and the focal organization and its partners, as shown in Figure 1. In turn the co-creation process influences co-created value. In this study we consider benefits to be consistent with the conceptualization of IT value as a result of decades of research on that topic.

According to Poppo and Zenger [4], alliance governance mechanisms, such as trust and goodwill, play an important role in all alliances. In addition to these, Sarker et al. [3] put forward the contractual mechanisms that play an important role in ERP implementation.

With respect to ERP implementation, technology-related collective strengths were found to play an important role. Underlying mechanisms of this factor are those such as: collective IT capability, simplicity and adaptability of the technology, and support availability knowledge transfer and learning [3].

Another key factor involves power and politics-enabling conditions. Both in ERP and e-government solutions, partners participating in the alliance may be motivated by self-interest. Even when partners in an alliance are all government organizations, they may be driven by different organizational goals. Status differences among alliance partners can also play an important role in outcomes. Likewise problematic, asymmetric power affecting decision-making can lead to hostage situations, e.g., adverse decisions about technology platforms. According to Sarker et al. [3], alliance governance, technology-related collective strengths and power and politics-related conditions all affect the co-creation process of the focal organization and its partners.

Sarker et al. [3] discuss three means through which co-creation operates: (1) exchange, (2) addition, and (3) synergistic integration. Exchange is about providing resources/competencies to one another. Addition indicates that one partner is able to build on the contribution of another. Synergistic integration suggests that cooperation can result in significantly higher value creation.

2.2 The benefits realization process

The importance of realizing benefits from IT-investments has been acknowledged by the IS community for many years [e.g., 1, 5, 6, 7] and one strand of IS research has explicitly focused on the mechanisms behind benefits realization in government. Our understanding of benefits
realization is that IT investments are likely to benefit from a structured process of organizational change with explicit emphasis on hands-on managerial involvement. Thus, in order to realize benefits, the process should be carefully managed throughout the lifecycle of an investment. This is consistent with what several authors refer to as benefits management, but the terms benefits realization and benefits management are seemingly used interchangeably in the literature.

We use the term benefits realization but our understanding is consistent with Ward and Daniel’s [8] definition: “the process of organizing and managing such that the potential benefits arising from the use of IS/IT are actually realized.” Several studies and publications suggest methods and even approaches to benefits realization [e.g., 8, 9, 10]. In response to the increasing demand from policy makers to demonstrate value from e-government investments, benefits realization practices have been adapted to the e-government field with promising results [1].

A variety of practical methods for benefits realization have been developed over the past years [10]. These methods fit neatly into the established as well as our adapted benefits management model (shown in Figure 2). This model serves as a reference model for benefits management and is still considered to represent the basis for good practice. The model was developed via a variety of case studies in the UK, primarily for industry use and in single organizations. However, according to Ward and Elvin, the model does not distinguish between private and public contexts but is considered to be useful in both sectors. Our benefits realization process model, which is an adaptation of Ward and Elvin [11], will be the basis for our analysis of benefits realization in complex e-government settings.

Figure 2. Our benefits realization process model (adapted from Ward and Elvin [11])

What are the process phases that an organization needs to go through in order to realize benefits and co-created value? Figure 2 depicts our adapted model of this likely process, a model which has been modified from the original model espoused by Ward and Elvin [11].

In Phase 1, organizations need to determine what their needs are and to state what benefits they expect from the incorporation of an e-government system into their services. This articulation phase is critical as in all other systems development projects. As stated by Swanson [12], needs assessment is *sine qua non* for good systems design.

In Phase 2, the systems development team, which should include representatives from all key stakeholders, plans the system and works out detailed designs for the system. Once again, this phase is not terribly dissimilar from the standard software
development waterfall model except that co-creation requires that user participation be broad enough to meet many stakeholder needs [13, 14].

Phase 3 is the implementation of the benefits plan and here once again, co-created value can only come if all the central partners are heavily involved in the process.

In Phase 4, the activities are concerned with measurement of outcomes, including whether the planned benefits have been realized. Alternatively, if they have not, the process calls for a cycling back to Phase 2 where adjustments are made to the plan.

Phase 5 is the culmination of the first cycle, and it involves post-implementation assessment. What is crucial in this phase is that the core partners are all involved in determining what benefits have been realized, what new potential benefits have been identified, and whether an additional cycle of changes are called for. If an additional set of changes seems to be appropriate, then the process cycles back to Phase 1 and is repeated to design and implement these.

3. Integrated process model of co-realization of benefits

We have integrated the theoretical model of Sarker at al. [3] (depicted in Figure 1), with the standard benefits realization process, as presented in Figure 2, to create an “Integrated process model for co-realization of value.” This novel approach to realizing benefits in governmental organizations is shown in Figure 3.

Sarker et al. [3] describe the resources that must be brought to bear to co-create value, but they do not specify the process that transforms these resources into value. Our integrated model seeks to fill this gap by sketching out the phases that organizations need to follow in order to realize benefits.
4. Research approach

Whereas we believe that our integrated model is itself a major intellectual contribution to the e-government benefits realization literature, it would be even moreso valuable to apply this model to real world settings to see how well, if at all, the model holds. This empirical test is admittedly not the strongest possible test of the robustness of the model, but it will give us preliminary indications of its potential applicability. Further research can determine the exact nature of the fit of the model to actual government sites and the extent of the external validity.

To initially examine the impact of inter-organizational processes on benefits co-realization, a qualitative method is an appropriate choice. Case studies are especially useful where an in-depth understanding of a contemporary phenomenon in its real-life context is desired [e.g., 15, 16]. We adopted this form of interpretive approach because it seemed best suited for describing a rich and detailed view of the benefits co-realization process, one based moreover on the respondents’ practical experience and insights.

4.1 Case selection

In this research we studied a large interoperability project in the Norwegian government, an appropriate choice since projects are inter-organizational or inter-agency and involve a number of differently motivated and purposed stakeholders.

This common technology platform project was the a suitable setting for our research for several reasons. First, the project team had (up-front) conducted a thorough cost-benefit analysis, which made it possible for us to afterwards study actual benefits realization as services were launched. Second, the project involved 38 government agencies. Because these agencies had to co-create IT value, we could closely study the benefits co-realization process. Third, the system owner of the common infrastructure had the responsibility to collect reports and document benefits.

4.2 Data collection and data analysis

The exploratory case study was conducted throughout 2011-2013. Data collection was carried out through a number of semi-structured interviews, with questions addressing benefits realization management, questions such as history and background of the benefits realization program, building, intervention and evaluation of the benefit realization model, capabilities needed, and the progress of benefits realization over time. In addition to these semi-structured interviews, a large number of informal conversations with people from both the system owner and the two service-owning agencies were held, and formal documentation of the benefits realization efforts were collected. See the overview of organizations and interviewees in Table 1.

<table>
<thead>
<tr>
<th>Organizations</th>
<th>Brief description</th>
<th>Interview/position/role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brønnøysund Register Centre</td>
<td>System owner of common infrastructure launched in 2006. Today 38 service owners are operating on the common infrastructure.</td>
<td>10 interviews</td>
</tr>
<tr>
<td>Tax Authority</td>
<td>Among the largest service owners and one of the founding partners. Launched its first service back in 2006.</td>
<td>5 interviews</td>
</tr>
<tr>
<td>Register of Bankruptcies</td>
<td>Small service owner, which launched its first service in 2013.</td>
<td>5 interviews</td>
</tr>
</tbody>
</table>

Table 1. Organizations and profiles of the interviewees

We analyzed the data using two theoretical lenses, namely benefits realization management and the co-creation of IT-value. The first theoretical perspective allowed us to investigate the phenomenon from a process perspective, whereas the latter emphasized the objective of supernormal benefits as a consequence of collaboration.

4.3 Case setting

The Norwegian Altinn (in English: “All in”) collaboration started in the early 2000s and was formally kicked off by the launch of the Altinn-portal in 2003. The initial mandate for the portal was to establish a single point of communication between the Norwegian government and businesses to help reduce the administrative burden. The initiative to develop Altinn came from a few central agencies, namely the Norwegian Tax Administration, Statistics Norway, and the Brønnøysund Register Center (BRC). BRC, which falls under the Ministry of Commerce, was made responsible for managing Altinn.

The early focus for Altinn was rather technical, i.e., establishing an Internet based portal to facilitate messaging (reporting) from industry. Altinn quickly became popular with industry users and has thus far
been considered a success by both government and industry.

The contract with the initial systems vendor ran out in 2008 but before this occurred, an extensive strategic initiative was carried out to ensure successful continuation of Altinn. This strategic action led to a shift in focus as the involved agencies recognized that the majority of potential benefits from e-government required interoperability in various forms. Consequently, the new strategy provided directions for Altinn to leverage interoperability, allowing entities to co-realize services and benefits rather than being just another portal. To comply with the mandate from the Ministry of Commerce that future developments of Altinn should be prioritized based the socio-economic value potential and to ensure leveraging of interoperability, BRC made two important decisions.

First, it was decided that new vendor contracts should ensure modular development of Altinn and provide a service generation interface where new service owners could develop their own services using Altinn technology. This was intended to ease the service production process and reduce parallel development within government.

Second, BRC developed an approach for benefits realization that was to be mandatory for all new services [17]. The benefits realization approach was developed during 2 years after 2008 and implemented in January 2011. An important part of the work with benefits realization was to visualize the value potential of Altinn. The visualization was carried out by performing socio-economic analyses of a subset of services planned for Altinn. The results from the analyses suggested a net present value of about USD $2.6 billion. The benefits realization approach developed by BRC consists of both a process model for new service owners and governance structures including organizational structures and prioritization schemes.

The political ambitions behind Altinn are considered fairly consistent with the process for co-creation of value. However, the ambitions articulated extend beyond what is covered by the co-creation model in that the Norwegian government wanted to facilitate collaborative realization of value. Hence, we expanded our co-creation model into a model for co-realization of benefits.

5. Empirical results

Our findings include implications for practical work with benefits realization in complex e-government efforts and theoretical implications in the form of general design principles for benefits realization practices.

Our resulting model was inspired by two strands of the IS literature, namely co-creation of IT value and benefits realization. Based on a 3-year case study we merged ideas from both strands and developed a new theory of co-realization of IT value, as presented in Figure 3. Figure 3 should be seen as a preliminary model that will be further refined and tested.

The integrated process model for co-realization of IT value takes its initial structure from the concepts underlying Sarker et al.’s [3] theoretical model for co-creation of IT value. As shown in Figure 4, we analyzed the case to investigate if alliance governance, technology-related collective strength, and power and politics-enabled conditions could be seen to affect a process for co-realization of IT value. Overall, we found this analysis to be fruitful in terms of understanding the case and mechanisms leading to or hindering realization of IT value in collaborative government settings. Below, we provide examples of how alliance governance, technology-related collective strength, and power and politics-enabled conditions affected realization of IT value in the collaborative setting.

5.1 Alliance governance

Our findings suggest that governance is a key factor for co-realization of IT value. Altinn has become a complex consortium consisting of more than 40 government organizations. As owner and facilitator of Altinn, BRC needs to provide structures and processes that ensure smooth operations. One area where governance mechanisms were needed was prioritization of development of new services. Capacity is an issue in terms of getting new services into production. A special unit within BRC is responsible for supporting development of new services and for putting new services into production. To avoid unnecessary delays and frustration among Altinn partners, BRC devised a prioritization regime for potential new services.

Prospect services in Altinn are to be channeled through one of three levels of initial analysis. Level 1 applies to simple services with low development costs. Services in this category are treated administratively and put to production given that they can demonstrate an obvious value potential. Level 2 applies to services with relatively high development costs and diverse stakeholders behind them. Services in this category are required to use BRC’s templates to carry out a pre-study and elaborate on the details of the service as shown in Figure 4. The outcomes of
the pre-study are to be forwarded to the Altinn Steering council where decisions are made. Level 3 applies to services where development costs are expected to exceed 750 million NOK (approximately USD $125 million). In these cases, the Ministry of Finance requires additional analyses to minimize risk. As in Level 2, the outcomes of the analyses are to be forwarded to the Altinn Steering council for prioritization.

How well is the Altinn confederation working? The Altinn federation is growing as more and more agencies join. The expansion, combined with the ambitious plans for prioritization of new services and follow up of benefits realization, made it even more critical to develop and implement a suitable governance structure.

5.2 Technology-related collective strength

A common technology development environment is bridging across the Altinn technology and the technology of the Altinn partners. All partners can use the development environment to initiate digital services that utilize Altinn infrastructure and features as well as their own technology plus, eventually, that of other partners.

The idea of sharing technology was part of the inaugural motivation for establishing Altinn in the first place. Over time this has proved useful in that it frees up capacity at the agencies.

5.3 Power and politics-enabling conditions

Although the Altinn platform is administered by BRC as a mandate from the Ministry of Commerce, many of the service-owning agencies of the Altinn federation have their mandates from other Ministries (e.g., Ministry of Finance and Ministry of Labor) and thus exist in separate silos with separate budgets. The potential for goal conflicts is, therefore, ever present. Altinn partners have varying ambitions with regard to digitization and also varying needs for technology infrastructure and process support. BRC’s ability to manage stakeholder interests was thus key to keeping Altinn partners in the consortium and not moving off with separate solutions.

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**Figure 4. Integrated process model for co-realization of benefits at Altinn**

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2492
5.4 Altinn

Altinn and BRC provide a resource bundle that includes the common technology platform, a standardized development environment, and shared knowledge about integration and processes for benefits realization. Further, Altinn has also signed contracts with various consultancies, allowing partners to use these consultants in various parts of their service development process.

5.5 Co-realization process

As mentioned earlier, BRC developed an approach to benefits realization to be used for all major new service developments. The approach consists of five main phases:

Phase 1: BRC and service owner identifies benefit areas. In this phase, the service owner establishes contact with BRC to explore a potential service via Altinn. BRC can provide support in concretizing the potential service and help explore potential benefit areas for the new service.

Phase 2: BRC and service owner plan benefits. Here, BRC assists the service owner(s) in elaborating on initial ideas on a new service into a detailed benefits plan. External consultants are also available to assist in the process. The output of the process is a document listing all major costs and expected benefits from the new service – including a list of actions to ensure the realization of the benefits.

Phase 3: Service owner implements plan. The service is now developed and implemented in accordance with the benefit plan. BRC can be consulted to assist throughout the process.

Phase 4: Service owner measure and report benefits. BRC requires service owners to report on realized benefits annually. The service owners are responsible for measurements according to the benefit plan.

Phase 5: BRC evaluates benefit gaps and needs. BRC accumulates benefit reports from all services and are thus able to assess progress and benefits across the entire Altinn portfolio. In addition, BRC can discover delays in particular services and, if needed, suggest or implement corrective measures.

The approach is scalable to cater for service development initiatives of different scope and sizes. BRC can assist Altinn partners on practical issues. The approach is seen as “co-realization” process given that it involves a minimum of two actors, BRC and the service-owning agency. Further, it is becoming increasingly acceptable to develop services involving more than one agency. The approach developed in BRC is consistent with our integrated benefits management model [8, 11].

5.6 Altinn service owners

Similar to Altinn, the Altinn service owners bring with them a resource bundle that includes domain knowledge of public eServices and their own legacy systems and data repositories.

5.7 Co-realized benefits

As noted earlier, Altinn has already produced value for its adopters. What kind of value? The construct of “value from public IT” is currently receiving considerable attention from the e-government research community [18]. A possible way of classifying value from public IT can be found in the e-government economics model [19]. Here, efficiency, effectiveness and democracy are seen as principal value categories. With respect to Altinn, emphasis is first placed on socio-economic value from services. Value for society (effectiveness) and value for government entities (efficiency) are considered to be highly valuable.

6. Contributions

We have attempted to answer our research question, namely “How should organizations operate to ensure realization of benefits in contexts involving or demanding inter-organizational collaboration?” by advancing a new, integrated theoretical model. We then offered a proof of concept by applying the model to an e-government setting. Following that, we examined the appropriateness of the model in explaining the dynamics of co-realization of benefits in a complex interoperability setting.

The practical implications of our work include first, improvements in benefits realization practices, especially in terms of governance and stakeholder management. The interoperability context demands strong support for coordination and governance of involved parties. Furthermore, emphasis on stakeholder management seems vital in order to keep stakeholders satisfied and continuing with the consortium.

The scholarly implications include the advancement of a theoretical model of co-realization of e-government benefits. Co-creation of value has become a critical topic across the business disciplines and theorizing about co-creation in a government setting is an important extension to this scholarly
work. Our theoretical contribution fills a gap in the academic literature on benefits realization in settings involving multiple organizations. Moreover, our study contributes theory to the under-theorized e-government field [20-22]. To extend our work, we suggest that researchers examine our propositions in other e-government settings. For the purposes of external validity, it would be useful to expand the consideration of other government agencies in other contexts. If our theoretical model proves to be robust, this could lead to a considerable improvement in government IT spend and service provision.

7. References