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Original title: Hvordan lykkes med digitalisering? En undersøkelse av nyttestyring av IT-prosjekter i offentlig sektor

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ISSN: 0803-9763 (paper version)
ISSN: 0804-5585 (web version)
ISBN: 978-82-8433-004-4 (paper version)
ISBN: 978-82-8433-005-1 (web version)

DATE: April 2021
PUBLISHER: Ex ante academic press

Concept Research Programme
Norwegian University of Science and Technology
7491 NTNU – Trondheim
Norway
www.ntnu.no/concept

English summary

The level of realized benefit is crucial in deciding whether a digitalization initiative has been successful or not. As an example, it is of little help if a digitalization project succeeds in delivering the specific functionality on time and on budget if the project fails in providing actual benefit. Despite this fact, benefit management has traditionally been subject to little attention in public digitalization. This mismatch is apparently changing as more public digitalization initiatives incorporate processes and roles for benefit management. Benefit management in this context includes processes and roles to identify and analyse benefits (for example as part of a cost-benefit analysis), plans to realize benefits, en route management of benefits and documentation of realized benefits.

Benefit management is still an immature area in the public sector. Practices are different across entities and projects, and it is not always clear what are the best practices and ways to organize in order to succeed. This lack of experience and knowledge motivates this study. The purpose is to answer the following research questions:

1) How is identification, planning, realization and measurement of benefits conducted?
2) How does benefit management practices relate to the degree of success in achieving benefit?
3) What are evidence-based measures to obtain good benefit management?

To answer these questions, we went through existing research literature on benefit management, as well as gathering and analysing information on benefit management in digitalization of the public sector in Norway. This includes ten IT projects from the co-founding scheme of the directorate of digitalization (Medfinansieringsordningen) in 2017, eight IT projects that have been through the Norwegian government's scheme for external quality assurance (the QA-scheme), five IT projects in the defence sector, as well as continuous development of two products/services.

After a short review and explanation of concepts and different frameworks for benefit management in chapter 2, our research method is presented in chapter 3.

We here describe how data on the 23 projects and two product areas was gathered from various documents (e.g., conceptual appraisal reports, documents from management and quality assurance, cost benefit analyses, plans on benefit management and final reports evaluating realized benefits). For 15 of the projects and both product areas we also collected experiences through semi-structured interviews with project owners and other personnel with responsibility for realizing benefits. The interviews emphasized especially the respondents' perceptions and experiences on how to succeed with benefit management.

The literature review in chapter 4 summarizes evidence from extant literature, that notes that benefit management often gets much attention in the early phases of projects, in terms of cost-benefit analyses being conducted, and plans to realize benefits being developed. On the other hand, it is less common to apply benefit management practices during later phases of the project, and few evaluate actually realized benefits ex post. The review suggests that success in achieving benefits in digitalization projects is seen in relation to the following:

- Identifying a broad range of different types of benefit. (Weak/medium evidence)
- Implementing formal cost-benefit analyses. (Weak evidence)
- Describing benefits so that these can be evaluated/measured. (Weak evidence).
- Plans implementation of benefit realization. (Medium evidence)
- Has personnel with responsibility for the realization of benefits. (Medium evidence).
- Implementing benefit management during the project. (Strong/medium evidence)
- Evaluating/measuring realized benefit. (Medium/strong evidence)

Chapter 5 describes some of the key findings from our analyses of the gathered information on the 23 projects and two product areas, divided into different thematic areas and research questions.

Research question 1: How is identification, planning, realization and measurement of benefits conducted?

In the theme *cost-benefit analysis* (typically interpreted as *social* cost-benefit analysis) we find a tendency that these analyses mainly serve as means to get project approval and financing. Therefore, it is crucial for projects to document a

positive benefit-cost efficiency, but less important to use the cost-benefit analysis in the planning and management of benefits during the project. Furthermore, we observed a negative side-effect from the co-founding scheme, with future budgets being cut based on the planned internal benefits in the form of cost savings. The implication of this is that not all internal cost-savings are being identified, whereas non-monetized benefits and external and societal benefits (that do not lead to budget cuts) are fully included in the analysis. We also found indications of a lack of skills in conducting cost-benefit analysis in several of the projects. A further weakness in some of the projects was the lack of involvement of external benefit owners (i.e., those responsible for achieving benefits in other public entities affected by the digitalization initiative) in the cost-benefit analyses.

Almost all (19 out of 23) of the projects had *benefit plans* for when and how different benefits should be realized. An effective tool, that we only found used in three of the projects and one of the product areas, was a "benefit map". Benefit maps visualize and communicate the benefit plans to involved parties, including both end users and developers. Benefit maps can also visualize relationships between deliveries and benefits, and further between benefits and strategic goals. Data from the interviews indicate that planned benefits to some degree (35% of the projects) were perceived as "best case" of what was possible to achieve. Benefits were often (50% of the projects) not prioritized against each other. The plans covered, to some degree, but far from always (65% of the projects), how to evaluate realized benefit. We analysed the quality of the benefit plans according to the SMARC criteria (S=Specified, M=Measurable, A=Accountable, R=Realistic, C=Comprehensive). This analysis revealed that projects to a large degree were successful in specifying planned benefits (S), varied in terms of being measurable (M), were rather clear when it came to responsibilities (A), had deficiencies in assessing the benefits' uncertainty and realism (R), as well as a large variety regarding comprehensiveness (C).

Managing benefits during the execution phase of the project is well documented in literature as a prerequisite to succeed in realizing benefits. This is to some degree supported by our data where half (50%) of the projects perceived this as very important or important to succeed. In addition, many of the projects (50%) perceived it as important to have a person responsible for achieving benefits and having a plan for how to realize benefits. However, there were also projects (35%) that found the benefit plan to be not important.

Documentation of realized benefit varied a lot among the projects. About half of the projects had produced a project closure report containing, to some degree, documentation on realized benefit, but very few (17%) of these reports had a level of detail that allowed an evaluation against planned benefits. Most of the projects spent little resources on evaluation and documentation of benefits, and when this was done it was mostly centred on only a small part of the planned benefits.

Project outcome varied a lot. When we exclude the three projects (all within the external quality assurance scheme) that were stopped, most of the projects had good cost control (only 24% with more than 20% deviation from initial budget (P50)) and medium time control (47% had more than 20% deviation from initial end-date). More than half (59%) of the projects considered their ability to realize planned benefits to be at least 90%, 24% considered that between 60 and 90% of planned benefits would be realized, and only 18% of the projects considered that less than 60% of planned benefits would be realized. We found a small correlation between cost control and the realization of benefits ($r = 0.3$), and between time control and the realization of benefits ($r = 0.1$). That is, a project that delivers on time and budget, has no guarantee that it will deliver good benefits.

To examine *benefit management in continuous development* (management and further development) we looked at two products/services. Both of these were a continuation of larger digitalization projects. The main finding from these two were that processes and roles largely were scaled-down versions of benefit management practices present in the original projects. Both products were for the most part successful in creating efficient processes for continuous benefit management, but they also put effort into further improvement of these processes.

Research question 2: How does benefit management practices relate to the degree of success in achieving benefit?

Our analysis of the relationship between *benefit management practices* and *the level of project success* (where realized benefit has most weight, but time and cost control also were included) provided the following key results:

- Perceived importance of, and scope of, the cost-benefit analysis are only weak indicators on how well projects performed. This result is to some degree supported by findings in the literature review, where cost-

benefit analysis typically is the benefit management practice being the least important for successful benefit management.

- Projects where the individual(s) responsible for realizing benefits had an operational role and good domain knowledge, and not for example the role of line manager, were more successful than other projects. This finding is on a subject not previously studied, but it matches the point from the literature review on the importance of having persons responsible for achieving benefits.
- Benefit plans with measurable benefits (the M in the SMARC criteria) performed better than other projects. There has only been one previous study of this subject, with an equivalent result.
- Projects perceiving the benefit plan as important, performed better than other projects. This finding corresponds entirely with previous studies. Evidence supporting the importance of having a formal plan on how benefit should be realized, and not only what benefit should be realized, is in other words strong.

Research question 3: What is evidence-based measures to obtain good benefit management?

We use the third research question to offer 28 evidence-based recommendations for benefit management in public sector digitalization projects in chapter 6. This includes, among other things, the following recommendations:

- Change in the role description for the individual responsible for realizing benefits, from being a role within the line of general management into an operational role in the project where domain knowledge and communication are emphasized.
- An increased use of benefit maps to visualize and communicate the project logic and planned benefits to both development teams, the business side and other end users.
- Increased attention to identify unplanned benefits during project implementation.
- Measures to increase competence in the implementation of cost-benefit analysis.
- Reconsider the use of budget cuts in the co-founding scheme for digitalization projects, to avoid adverse effects on identification and management of benefits.

- Review the analysis of uncertainty in benefits for a better compliance between how costs and benefits are appraised in the cost-benefit analysis.
- Measures to ensure that given benefits can both be evaluated and managed.
- Emphasis on the appointment and inclusion of external benefit owners.
- Improved processes for evaluation of realized benefits, preferably in the form of continuous evaluation where possible.
- Improved mechanisms for sharing experiences from benefit management.

This report concludes that there are good benefit management practices in public digitalization in Norway. Use of good practices within benefit management is, through this report, together with previous examinations, well documented to correspond to successful digitalization.

However, much can still be improved. Our hope is that the results and recommendations in this report can contribute to investments that even more benefits in the future. We wish you good benefit management!

Concept report series

Paper version: ISSN 0803-9763

Web version: ISSN 0804-5585

Norwegian version: https://www.ntnu.no/concept/concept-rapportserie

English version: https://www.ntnu.edu/concept/concept-report-series

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Concept report no. 64

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Concept er lokalisert ved Norges teknisk- naturvitenskapelige universitet i Trondheim (NTNU), ved Fakultet for ingeniørvitenskap og teknologi. Programmet samarbeider med ledende norske og internasjonale fagmiljøer og universiteter, og er finansiert av Finansdepartementet.

The Concept research program aims to develop know-how to help make more efficient use of resources and improve the effect of major public investments. The Program is designed to follow up on the largest public projects over a period of several years, and help improve design and quality assurance of future public projects before they are formally approved.

The program is based at The Norwegian University of Science and Technology (NTNU), Faculty of Engineering Science and Technology. It cooperates with key Norwegian and international professional institutions and universities, and is financed by the Norwegian Ministry of Finance.

Address:
The Concept Research Program
Høgskoleringen 7A
N-7491 NTNU
Trondheim
NORWAY

ISSN: 0803-9763 (paper version)
ISSN: 0804-5585 (web version)
ISBN: 978-82-8433-004-4 (paper version)
ISBN: 978-82-8433-005-1 (web version)

Produksjon: www.lagtrykk.no Miljømerket trykkeri, lisensnr. 241 811