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A Business Case Method for IT Investments in Danish Municipalities

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Abstract. Effective management of information technology (IT) investments is increasingly important for Danish municipalities. This is why they along with other both public and private sector organizations increasingly are using IT business cases. The business case is a document specifying the main rationale behind the expected value and cost of an IT investment for the adopting organization. However, experiences from Danish municipalities reveal difficulties in developing effective IT business cases for purposes beyond simple cost savings. Based on collaborative action research with Danish municipalities, we present insights on the challenges in contemporary IT business case practices. We applied these insights in conjunction with contemporary literature on business cases to develop a business case method for Danish municipalities. Based on the municipalities' evaluation of the method we summarize its key contributions to IT business case practice in local government organizations.

1 Introduction

IT management is instrumental in organizational exploitation of IT (Feeny and Willcocks 1998). However, researchers have documented numerous IT management issues in both general and country specific public sector investigations (Swain et al. 1995, Caudle et al. 1991, Chang et al. 2000, Loukis and Tsouma 2002). IT management in public organizations can be particularly difficult because of the increased focus on accountability, openness, representativeness, and equity, more external and vertical linkages, incremental rather than holistic planning due to constraints in budgeting and purchasing, extreme risk aversion due to potentially more damaging consequences of errors from risky technologies, and divided authority over IT decisions due to legal, civil services, and political constraints (Chircu and Lee 2005). Danish municipalities share these difficulties and are in eminent need of initiatives and tools to help manage IT investments more successfully.

A common tool used in both public and private organizations for managing IT investments is the business case (Ward et al. 2008). The concept of a ‘business case’ refers to an artefact in the form of a document specifying the main rationale behind the expected value and cost of an IT investment for the adopting organization. This definition is used in Danish central and local government practices and in research on business cases (Ward et al. 2008, Eckart et al. 2009, Eckartz et al. 2010). In Gil-Garcia and Pardo’s investigation of e-government success factors they studied the reasoning behind business cases (Gil-García and Pardo 2005). They argue that a robust empirical base particularly for business case strategies in public organizations would provide public managers with a more informed roadmap for their efforts (Gil-García and Pardo 2005); that empirical base is lacking so far.

The purpose of this research is to improve IT business case practices in municipalities. We report on an action research study on IT business cases in Danish municipalities that we carried out as part of a larger collaborative practice research (Mathiassen 2002) effort in the DISIMIT project. In collaboration with a group of municipal IT managers, we identified IT business cases as a key concern in their practice. Following this insight, we initiated improvement activities for their IT business case practices.

The chapter is structured as follows. Section 2 describes the theoretical background on IT business cases, followed by our research approach in section 3. In section 4, we present our findings on municipal IT business case practices and propose our IT business case method for municipalities. The chapter ends with a conclusion in section 5.

2 Theoretical background

Only a limited amount of empirical investigations of IT business cases is available, e.g., in the context of cross-organizational enterprise systems (Eckartz et al. 2009, Eckartz et al. 2010), digital library investment (Cervone 2008), evaluation of investment in nonprofit organizations (Braaksma et al. 2006), and strategic IT investment decisions (Ross and Beath 2002). The most prominently published approach to developing an IT business case in the information systems literature is, that of Ward, Daniel and Peppard (2008), which has its offset in benefits management (Ward and Daniel 2005). Benefits management is receiving increasing attention in e-government research and is an area well aligned with local governments' need for more effective management of value creation with IT.

The approach to developing IT business cases is based on research of both private and public organizations (Ward et al. 2008) and features six steps in identifying the: (1) business drivers and investment objectives, (2) benefits, measures, and owners, (3) structure of benefits, (4) organizational changes enabling benefits, (5) explicit value of each benefit, and (6) costs and risks. Their approach differs from most business case approaches in the following ways (Ward et al. 2008):

- Non-financial benefits are also recognized.
- Measures are identified for all benefits, including subjective or qualitative benefits.
- Evidence is sought for the size of the benefits included.
- An owner is identified for each benefit.
- Benefits are explicitly linked to both the IT and the business changes that are required to deliver them.
- Owners are identified for ensuring the business changes are achieved.

In general, does the recognition of non-financial benefits correspond well with the non-profit nature and political agenda in public sector organizations (Dufner and Holley et al. 2002). Public sector organizations are likely to estimate the potential value of an IT investment by looking at both its economic value and its political value (Chircu and Lee 2003). The measurement of benefits supports informed and documented agreements between IT management and the affected public organization and facilitates later benefits evaluation. Linking benefits to both the IT and organizational changes is highly relevant in addressing the difficulties of change in public sector organizations (Fernandez and Rainey 2006). Finally, the ownership of benefits and business change corresponds well with the frequently divided authority over IT decisions (Chircu and Lee 2005) and large number of influential stakeholders in public sector organizations (Bannister 2002). In summary, the characteristics of the business case method appears valuable for public sector IT management, suggesting similar usefulness for Danish municipalities.

3 Research approach

Our action research effort to improve the practice of using IT business cases in municipalities was part of the DISIMIT project. The action research (Baskerville and Wood-Harper 1996, Baskerville and Wood-Harper 1998, Davison et al. 2004) involved a working group consisting of representatives from 4 municipalities (ranging from 4,000 to 30,000 employees) and 2 consultancy firms and action researchers from a university (Nielsen and Persson 2010). This working group identified business cases as a key concern in the municipalities IT management and initiated improvement activities to address it. As researchers we considered the argued value of business cases for IT management (Ward et al. 2008) and the lack of empirical knowledge on business cases in e-government (Gil-García and Pardo 2005). We then initially adapted a business case method based on the approach by Ward et al. (2008). We improved the method in three iterations based on explicit evaluations in three municipalities. Following the iterations, we closed the action research process when the working group had assessed the method's usefulness. The working group then decided to elicit the method as a handbook available to other municipalities.

The action research process had eight key encounters, which were either a full day workshop or evaluation of the business case method at a municipality:

- 2009-11-11 Workshop on the research project organization and improvement focus
- 2009-12-16 Workshop on business case models and experiences
- 2010-02-08 Workshop on the business case content, development and context
- 2010-06-29 Evaluation of business case method at municipality 1
- 2010-08-18 Evaluation of business case method at municipality 2
- 2010-10-13 Workshop on further development of the new business case method
- 2010-10-26 Evaluation of business case method at municipality 3
- 2010-12-09 Workshop on benefits realization based on a business case

Preceding each encounter, we wrote a study protocol inspired by the case study protocol advocated by Yin (2003). Our study protocol documented initial thoughts and decisions for each of the action research criteria suggested by Nielsen (2007): roles, documentation, control, usefulness, frameworks, and transferability. We documented all encounters through audio recordings, filed notes and minutes; and we distributed the minutes to all participants. Following each encounter, an audio recorded debriefing meeting (Spall 1998) was conducted among the participating researchers. A participating researcher furthermore wrote a reflective diary entry (Jepsen et al. 1989) on the encounter and the period before the encounter. We integrated the data analysis into the action research process, in particular through the debriefing meetings following each encounter. We analyzed the municipalities'

business cases and related documents between the encounters and we then presented and validated the results at a workshop. This integration of data analyses throughout the action research process allowed continuous feedback as we presented our results to the practitioners. The documentation in the form of debriefings and research diaries also allowed later critical revisits to our analyses and decisions.

4 Findings

In the following, we present our findings on IT business case practices in Danish municipalities and the proposed business case method.

4.1 Municipal IT business case practices

A business case can have different forms and purposes across municipalities and even within a single municipality. While the literature claims that the main purpose of developing an IT business case is to obtain funding approval for the financial investment (Ward et al. 2008), this was not always the dominant issue in the Danish municipalities. Their investment decisions were in some cases already made and they developed a business case post hoc to justify and promote the IT investment decision internally. Sometimes central government provided a business case that could serve either as the investment decision or as basis for the development of a new business case that included the specifics of the municipality. We identified three different types of business cases relative to a municipality's IT investment decision in the initial workshops see Figure 6.

The municipalities develop Type-1 IT business cases before their municipal managers decide on the IT investment. This type corresponds with the literature, where the main purpose of developing an IT business case is to obtain funding approval for the financial investment (Ward, Daniel et al. 2008). Thus, a Type-1 business case influence or informs the municipality's IT investment decision. Type-1 business cases appeared usually as very minimalistic in terms of content, e.g., characterized by only a simple return on investment analysis. However, additional characteristics could be included as listed on the Type-1 IT business case document in Figure 6.

The municipalities develop Type-2 IT business cases after their municipal managers have decided on the IT investment. Thus, a Type-2 business case elaborates or justifies the municipality's investment decision. Type-2 business cases are the most common in the municipalities, and IT project managers sometimes request a business case because it is required by the project management method, e.g., Prince2, adopted by several municipalities.

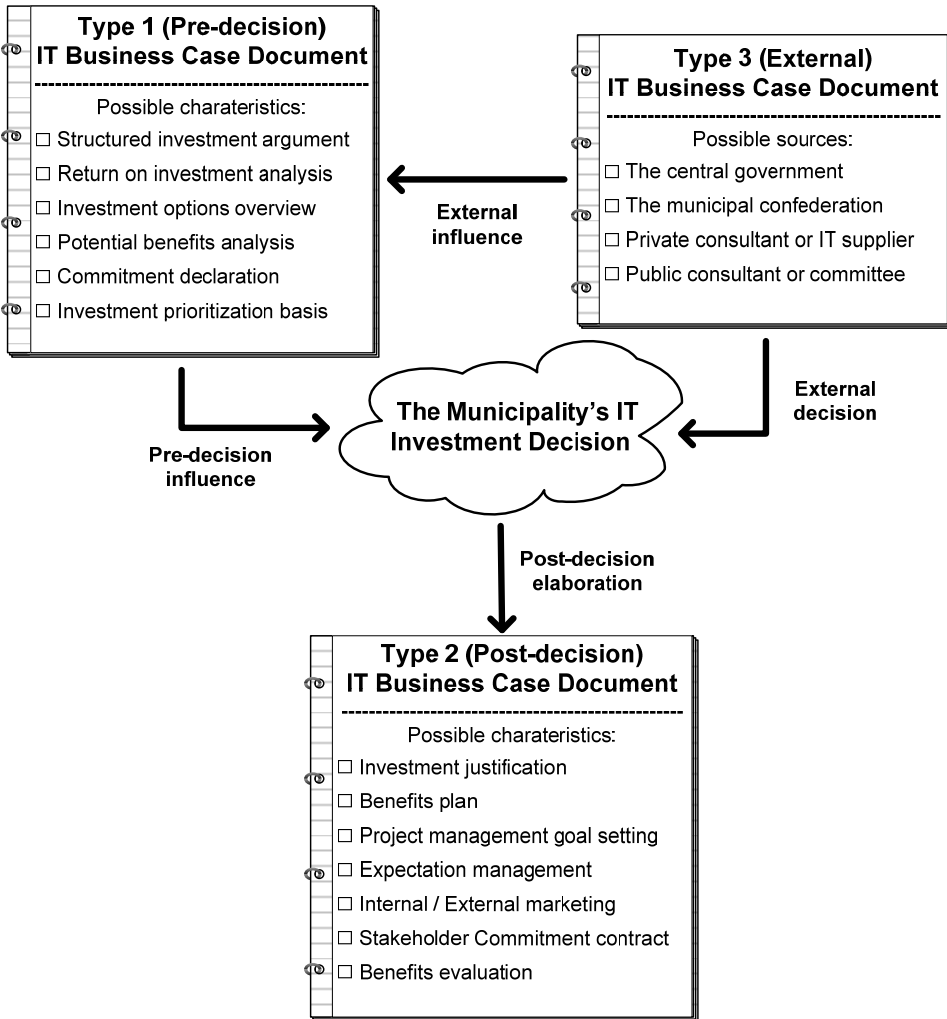


Figure 6. Three types of business cases relative to a municipality's IT investment decision (Nielsen and Persson 2012)

Other public or private organizations develop Type-3 IT business cases before the municipal managers have decided on the IT investment. Thus a Type-3 business case may influence or in some cases force the municipal managers to adhere to an externally decided IT investment (e.g., from a central government department). A Type-3 business case may also influence a Type-1 business case, e.g., if it is from a private consultant or IT supplier. Municipalities can transform Type-3 IT business cases into a Type-1 or Type-2. They can also transform a Type-1 into a Type-2, but many of their business cases they do not transformed at all. In summary, we found that IT business cases in the municipalities had different forms that could change over time relative to the municipalities IT investment decision. How-

ever, the municipalities did not consider a Type-3 IT business case very useful in ensuring realization of its proposed value without transformation into a Type-1 or Type-2.

In addition to the different types of IT business case, the initial workshops further revealed a concern among the IT managers that the very extensive general business case method of central government was much too inclusive, complex, and expensive to apply. The IT managers based their concern on experiences in presenting business cases to busy municipal managers where time and effort did not allow for comprehensive documents. These managers all belong to the same organization and thus shared significant knowledge already, with no need to document further in a business case. More importantly, the level of trust between the managers allowed for binding agreements without extensive formalization of contracts or business cases. Finally, the size of the IT investments in the municipalities did not justify extensive work on a business case, as it would be disproportionate compared to the actual investment.

The three municipalities' different methods for developing a business case had 12, 14, and 15 elements or steps while the central government's general method had 40. We did a comparison of the central government's general method with the three municipalities' and presented this in the workgroup. In our comparative analysis of these four IT business case methods, we identified six overlapping elements: (1) Business background, (2) Business problem, (3) Financial consequences, (4) Risks, (5) Milestone plan, and (6) Key performance indicators. This analysis thus showed a limited agreement on what a business case for a municipality should include.

Another concern raised by the IT managers was the difficult appreciation of non-financial value in a business case. We conducted a value-focused discourse analysis of interviews with the three municipalities' IT manager and their chief executive officer. Our analysis applied a model of IT value in public administration (Bannister 2002) and we presented its results at a later workgroup meeting. The analysis revealed a predominance of foundational values relating to cost-efficiency considerations. However, their value discourses also included policy formulation, democratic, service, internal, and external values.

4.2 The IT business case method

Our analyses of how the municipalities' developed their business cases suggested a need for a new and leaner IT business case method, which addressed their needs for both a Type-1 and Type-2 business case (see Figure 6). Our literature review of business cases identified the approach by Ward et al. (2008) presented in Section 2 as a basis for improving their current practices. Their approach has six steps that largely covered the shared elements from the analysis of the municipalities' business cases and it allows for non-financial benefits. We translated the method to Danish and adapted it to the municipal context, e.g., by referring to the municipality as an organization instead of a business. We iteratively (re-)designed the busi-

ness case method, presented and applied it, and then evaluated it. We intended to address the business case needs in most municipalities with our method and presented it in a brief handbook made available to all municipalities (Nielsen and Persson 2011).

The resulting method involves four steps: (1) define motivation and investment objectives, (2) identify benefits, measures, and owners, (3) structure the benefits, and (4) identify costs and risks. In the following, we elaborate on these four steps.

Define motivation and investment objectives

In addressing the first step, the business case should present the challenges faced by the municipality and substantiate how the suggested IT investment contribute. Such a motivational description is short and contains significant challenges for the municipality. The motivation may address internal organizational challenges or external challenges such as new laws, benchmarking, or new standard procedures.

- **Motivation:** What internal and external challenges is the municipality facing?

A good motivation may base on an overall financial agreement, digitalization opportunities, or demographical projections. While a poor motivation, receives low interest from decision makes, for example by focusing on specific technical issues or public administration practices. Following the motivation, the investment objectives are identified. Investment objectives are limited in numbers and shows how the investment contributes to the municipality's challenges described in the motivation. All involved managers need to agree on these general investment objectives.

- **Investment objectives:** What does the suggested investment contribute to the municipality?
- **Investment objectives:** How is the investment addressing the municipality's challenges?

Good investment objectives summarize the intent with the investment at a general level and show what value the investment creates for the municipality. The value is the sum of one or more specific benefits for which the IT investment contributes (These benefits are specified in step 2). Value for a municipality is not only financial that is achieved through optimization of resource consumption and defined in terms of time and money. Value is also the achievement of fairness, mutuality, and proper discharge of duties defined in terms trust and entitlements. Value is finally also the achievement of robustness, reliability, and adaptivity defined in terms of security and survival (Hood 1991).

IT investments often have high complexity that may not only cause delays, but also blur the focus on achieving the planned benefits. An individual responsible for the business case is therefore appointed to maintain focus on why the IT investment takes place – namely for the realization of benefits. The individual responsible for the business case must therefore update the business case when planned objectives and benefits change. The planned objectives and benefits must be docu-

mented and communicated clearly to all parties involved. A successful business case responsible ensures that the various stakeholders are heard and that they explicitly take responsibility in the benefits realization. IT investments themselves create no value for the municipality, it is the organizational changes, it can support. Thus, the business case responsible must be able to bring together and negotiate with all the different actors that will be responsible for the organizational changes.

- **Business case responsibilities:** Who is maintaining the business case document and sustaining the benefits realization process?

An appropriate business case responsible is an influential manager in the municipality with an interest in the IT investment's success relative to his or her management area. The business case responsible may not perform all tasks personally, but can appoint a deputy recruited internally from the municipality or from an external consultancy. It must however still be indisputably, where responsibility lies. A tempting but poor choice of business case responsible will be the responsible technical project manager for the IT investment, which has great insight into the technology, but not in the affected business processes. Other poor choices of business case responsibility will be whole groups or units or municipal managers with low interest in the IT investment or limited ability to negotiate with the parties responsible for the organizational changes.

Identify benefits, measures, and owners

In addressing the second step, the municipal managers affected by the IT investment identify the benefits expected from addressing the investment objectives. Investment objectives differ from benefits by requiring agreement among all the involved decision makers and managers. Benefits, on the other hand, is usefulness for specific groups or individuals resulting from achieving the general investment objectives. Thus, not everyone needs to agree on all benefits, unless significant conflicts arise. A benefit has three elements, (1) the usefulness achievable by the IT investment, (2), a measure to determine whether it is achieved, and, (3) an owner who gains from the benefit, can give it value, and make sure it is realized. An IT investment with few investment objectives may have numerous benefits for numerous stakeholders.

- **Benefits:** What usefulness can be achieved by the IT investment?

A benefit often emphasized in business cases for digitalization of municipal work processes is postage savings. The popularity of this benefit in municipal business cases can be due to the ease of determining a financial measure for the benefit. However, it is important not only to focus on benefits easily measurable in time and money. The benefits with more difficult measures may often turn out to be the most significant on the long run. Important to the success of an IT investment is also the identification of benefits for the actors' central to the overall benefits realization. These benefits may be fewer errors in the casework or higher employee satisfaction. Following the identification of a benefit may determining its

measure help a more precisely formulation. Thus, if a benefit is higher efficiency, its measure must be independent of efficiency changes occurring without the influence of the IT investment.

- **Measures:** How do we determine whether a benefit is achieved?

Measures such as postage savings by investing in digital communication can be relatively easy to determine monetarily. If instead the benefit is fewer errors in casework, its measure could base on comparisons of the case and case complaints ratio before and after implementing the IT investment. Employee satisfaction can be measured through quantitative employee surveys, employee retention times, or a personnel manager's assessment before and after the IT investment is implemented. When determining benefit measures, it is important to consider whether the advantages of such a quantitative study is large enough compared to the costs of implementing it. An inexpensive alternative may be to rely on a manager's assessment.

- **Owners:** Who may gain from the benefit or represent a group gaining from the benefit?
- **Owners:** Who can influence realization of the benefit?

Apart from determining a measure, an owner who gains from the benefit and can give it value and ensure its realization is identified. The benefits owner must be willing to work closely with the people implementing the IT investment and ensure the benefit is realized. The owner may be personally involved in the implementation or participate by the resources and influence that she or he has. An owner does not necessarily realize the benefit as it may depend on workflows that are beyond the owner's direct control or influence. However, it is the owner's responsibility to give value to a benefit in the business case and ensure that there is a plan for its realization. The right owners can contribute to both the commitment to investment, but they can also help to provide a business case with a good reputation – especially if the owners are experienced managers who are influential in the municipality.

It is important benefits ownership refers to a named person rather than a department or function held by several people. This limits the possibilities of avoidance of responsibility when necessary organizational changes need implementation. With redeployments or hiring related to benefits ownership, it is important to follow up on the business case. Predecessor's commitments in benefits realization must be passed on to the successor. Alternatively, it may be necessary to modify the business case by rewording or perhaps even eliminate the affected benefits. In general, the formulation of a benefit involves consideration of relationships between benefit, measure, and owner.

Structure the benefits

In addressing the third step, the benefits are structured by placing them in a benefits grid in Table 5, distinguishing between the type of change and degree of explicitness. Table 5 has three types of change in the columns and four degrees of

explicitness in the rows. Placing benefits in the grid show what type of organizational change give rise to the benefits and what degree of explicitness is know or should be investigated before the IT investment is made. The benefits grid is an alternative to simple listings of benefits, encouraging to more discussions and documentation of expected benefits, making a more robust business case. Using the benefits grid in all the municipality’s business cases helps comparisons of investments and their mutual prioritization.

		<i>Type of change</i>		
		Do new things	Do things better	Stop doing things
High ↑ Degree of explicitness ↓ Low	Financial benefits			
	Quantifiable benefits			
	Measurable benefits			
	Observable benefits			

Table 5. Benefits grid (Ward et al. 2008)

The first task in using the benefits grid is to identify the type of change required for each benefit. The type of change necessary for the realization of a benefit can be straightforward, while in some cases requires more analysis.

- **Organizational change:** What type of change is required for realization of the benefit?

Each of the three types of change represents different organizational challenges. Stop doing things may for example involve manual processing of routine matters or closing communication channels between the municipality and the citizen. Municipalities, however, have a wide range of service commitments and regulatory considerations that may make it difficult to realize this type of benefits. Do things better is a type of change relevant to many benefits in a municipal IT business case. These benefits are however often the least innovative and productive in the long run. It is therefore important to focus on the benefits of stop doing things or doing new things with IT investments. Doing new things could include the provision of new internal or citizen-oriented services. It is especially these benefits, which can demonstrate the value of an IT investment outside the circle of people involved directly. A benefit’s value has four levels of explicitness in Table 5. An important criterion for placing benefits in the four rows is the level of documentation. Each benefit’s initial place in the grid is at the observable level. It then relies on the

benefit owner to document the extent it is possible to move the benefit up to a higher degree of explicitness. The degree of explicitness reflects what is known about a benefit's value.

- **Benefit valuation:** How explicit can the value of the benefit be determined?

Various techniques can help lift benefits from measurable to quantifiable: (1) Internal documentation collected over a given time period can be helpful in the determining the benefits of stopping doing things. (2) Modelling and simulation can be used in the calculation of benefits associated with stop doing things or doing things better. (3) Benchmarks and reference organizations can support valuating benefits based on experiences from similar organizations such as other municipalities that have invested in the IT system, but also governmental, private or foreign organizations. (4) Pilot studies can be useful to test the technology but can also be useful for evaluating the benefits of doing new things. The resulting benefits grid should provide an overview of the benefits of the IT investment proposed in the business case. The grid shows a nuanced picture of the IT investment's expected value, where different people will focus on different benefits. Benefit grids may be very different across municipalities – even in cases where they involve the exact same IT system. Different municipalities have varied opportunities or willingness to explicate benefits to a quantifiable or financial degree.

Identify costs and risks

In addressing the fourth step, the IT investment's costs are identified and the associated risks are assessed. The costs also include those that are recurring after implementation such as licenses, data traffic, and maintenance. Most costs are easy to calculate, with the exception of costs associated with organizational change. The costs of organizational change are difficult to estimate and are often either underestimated or left out entirely.

- **Costs:** What are the costs of the IT investment?
- **Costs:** What recurring costs does the IT investment entail?

Not all costs can be estimated in financial terms and some of these may heavily influence the overall balance between costs and benefits in a business case. For example, may stopping a specific service result in a negative view of the municipality among a group of employees, citizens, or politicians. Identifying risks such as employee or citizen resistance or lacking capabilities is important in making the necessary changes needed for realizing benefits. Not only general risks for the IT investment needs identification, but also those associated with the contingencies for each benefit. The value of a high-risk benefit determines the importance of alleviating it.

- **Risks:** What contingencies may prevent the realization of investment objectives or benefits?

The risk analysis may reveal risks of such high importance that their alleviation should be included in the business case's costs. Considerations of a step's influence on the other steps in the business case method are important. In addition to considering risks and costs in relation to the identified benefits, their relation to investment objectives may also be considered. In general, a systematic analysis of potential dependencies between the business case elements is very beneficial.

5 Conclusion

We have applied an action research approach to study how we can improve IT business case practices in Danish Municipalities. Our action research has given insights on contemporary IT business case practices in Danish municipalities. We have used these insights to develop a business case method based on previous research (Ward et al. 2008, Ward and Daniel 2005) and iteratively designed it to address the needs of Danish municipalities. As a result, we have proposed a method involving the four steps:

1. define motivation and investment objectives
2. identify benefits, measures, and owners
3. structure the benefits
4. identify costs and risks

The proposed method emphasise (1) dynamic utility, in particular the use of business cases after a municipality's IT investment decision, (2) benefits ownership, by assigning named stakeholders to assess and realize benefits, (3) minimal content, by involving only for steps, and (4) social commitment, requiring significant informal interaction beyond the written material. Evaluation of the method (Nielsen and Persson 2012) suggests municipal IT business cases in general should seek minimal contents, benefits ownership, dynamic utility, and social commitment.

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