Exploring how the management of ERP business benefits influences achieving them

Kelvin Divendal
kelvin@divendal.nl

ABSTRACT
Organizations nowadays require their project teams to develop a business case to get approval for Enterprise Resource Planning system selections and implementations. These business cases contain cost information, but also information on business benefits to be realized. Managing these expected benefits during both the selection process and the implementation phase is critical to achieve these benefits.

This paper explores if and how these benefits were managed at Woonzorg Nederland, a Dutch housing association. It turned out that Woonzorg did not use the methods described in the literature and they also did not meet the goals which they expected. An important reason for this is that they did not share the expected benefits with the stakeholders. An approach using a conceptual benefit framework as described in [1] would probably have delivered better results.

Keywords
Benefits, Business Case, ERP (Enterprise Resource Planning)

1. INTRODUCTION
Organizations today commonly develop business cases to justify investments in and get approval for IT projects. Research demonstrates that only 30% of the IT projects each year delivers its expected benefits [2]. This finding matches with Enterprise Resource Planning (ERP) studies reporting that more than 70% of the ERP implementations fail to achieve their estimated benefits [3, 4]. It turns out that many organizations overstate benefits in their business cases and put these benefits aside during the actual implementation [5]. Some new approaches to benefits management were developed in order to better identify, plan and manage the delivery of benefits [6]. Also, a set of business case guidelines for cross-organizational ERP-enabled e-business integration is in development [1].

This research paper will investigate the ERP system selection process at Woonzorg Nederland, a housing association in the Netherlands. In 2005, Woonzorg Nederland assembled a project group with stakeholders from different departments with the goal to select an ERP system. They started engineering the requirements, developing the business case, creating a long list of possible suppliers and narrowing it down to a shortlist of two companies. But then, half a year later, the project was postponed because more detailed information needed to be acquired for the shortlisted suppliers to complete their proposals and, more importantly, Woonzorg Nederland decided to merge with two health care associations. They realized that merging influences their cross-organizational processes, even more because the health care associations had a totally different scope than Woonzorg Nederland. The impact of the merger needed to be further investigated first of all.

2. PROBLEM STATEMENT
Although a large number of papers has been published addressing ERP issues [7], there is limited research concerning ERP benefits and business case development. The purpose of this paper is to explore how the management of ERP business benefits influences achieving these benefits. This paper will focus on the business benefits which are formulated during the development of an ERP business case and on how these benefits are realized during the ERP implementation.

The implementation of an ERP system is a complex process that requires both the business and the people to change [8]. Therefore, the implementation is hard to reproduce in an experimental setting. This makes a case study the preferred approach for this research.

This brings us to the central question for this research:

How did Woonzorg Nederland proceed through the selection process of a supplier for their ERP solution and could a different approach deliver better results?

3. RESEARCH QUESTIONS
In order to answer the central research question the following questions will be answered:

- How did Woonzorg Nederland state the desired business benefits in a Request for Proposal during the selection of a supplier for their ERP solution?
- Which benefits were not stated in the Request for Proposal or came up later during the selection process?
- What are the gaps when the case study findings are compared to guidelines developed in the literature [5, 9, 10]?
- What changes can be expected using a different approach where the guidelines developed in [1] would be used?

The focus of this research is on these four research questions. The connection between them and the central research question is shown in the research model in Figure 1.

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission.

10th Twente Student Conference on IT, Enschede, January 23rd, 2009
Copyright 2009, University of Twente, Faculty of Electrical Engineering, Mathematics and Computer Science
The expected business benefits are actually realized [5]. How the combination of IT and business changes will deliver business benefits to achieving intended benefits, identify a few more purposes. It can ensure commitment from common practice [5].

Developing a business case for IT investments is nowadays a more business objective for this. Research indicates that 4.2 large businesses [10]. ERP systems integrate management support and automate the business processes of medium and large businesses. They are not made for a single customer, but for a company’s information needs within and across functional areas in an organization [11].

Most ERP systems are bought Commercial Off The Shelf (COST). They are not made for a single customer, but for a market. In practice, a COTS supplier may not only deliver the software off the shelf, but also extend it in customer-specific ways, for instance integrate it with other systems. [12, 13]

The implementation of an ERP system is a complex process that requires both the business and the people to change. ERP implementations are more complicated but also potentially more rewarding than other types of information systems (IS) implementations [8].

A crucial part of an ERP implementation is the selection process, as it defines what ERP suite will be used in the organization and usually determines the proposed extent of the deployment of the ERP software. The ERP selection process includes the development of a Request for Proposal, which presents the project scope from the organization point of view and defines the major expectations for the new system. Furthermore, organizations develop business cases to justify investments in and get approval for IT projects. This also accounts for ERP implementation project.

### 4.2 Business Cases for IT Projects

Whenever resources are used, the business case explains one or more business objectives for this. Research indicates that developing a business case for IT investments is nowadays a common practice [5]. However, it turns out that many organizations use the business case solely to obtain funding approval for the financial investments and not to actively manage the project [14]. They overstate benefits prior to the investment in their business cases and put it aside during the actual implementation, mainly because organizations do not demand precise justification of their investments. The project may be actively managed using other documents than the business case, like a Plan of Approach [5].

#### 4.3 Request for Proposal

A Request for Proposal is used by governments and businesses to initiate the process of choosing equipment and services to be purchased. It encourages competitive solutions among suppliers. In most cases, it has a technical section, a management section (also describing business processes) and a contracts-and-price section. Proposals are based on a supplier’s interpretation of the requirements in a Request for Proposal. This is why a Request for Proposal promotes a diversity of thinking among suppliers and encourages them to provide unique solutions based on their products and services [15].

When it is unclear how the technology will fit and work within the project and more information is needed by the project team than is publicly available, the project team may use a Request for Information. A Request for Information is typically structured just as the Request for Proposal would be, but suppliers are also encouraged to respond to the requirements and to spell out where there may be potential problems. Both documents are supposed to mention the goals and objectives of the project [16].

A Request for Proposal for an ERP tender should cover (i) the project scope, where the business needs are described, (ii) an organizational background containing information on current information systems and business practices as well as any data that are unique to the organization, (iii) both functional and non-functional requirements and (iv) an organizational dictionary which explains expressions, subjects or acronyms that have an unique or particular meaning.

Literature sources [15, 16, 17] suggest that several matters are important in the preparation of a Request for Proposal: (i) completeness, (ii) ease of read, (iii) prioritization of issues, (iv) teamwork orientation and (v) requirements representation methods. Business scenarios should not be used on their own to represent functional requirements, they do not have the flexibility and completeness that other representation mechanisms provide. A combination of use cases, activity diagrams and business scenarios would offer a more effective way for the both for the selection team to convey functional requirements to providers (through use cases and activity diagrams), and for providers to show that their applications are able to satisfy the user requirements (through demonstrations covering the business scenarios and extending them towards the cases and diagrams) [17].

### 5. RESEARCH METHOD

The first and the second research question are answered through exploratory case study research [18]. This method is chosen for several reasons: (i) case studies are a preferred approach when ‘how’ or ‘why’ questions are to be answered, when the researcher has little control over events and when the focus is on a current phenomenon in a real-life context [18], (ii) it offers a great deal of flexibility in terms of research perspectives to be adopted and qualitative data collection methods, and (iii) case studies open up opportunities to get the subtle data needed to increase understanding of complex Information Systems (IS).
phenomena such as ERP implementations. The case study includes (i) reviewing the Request for Proposal created by Woonzorg Nederland, (ii) interviews with stakeholders, and (iii) analyzing for possible inconsistencies between the two.

In order to answer the third question and thus find out what the gaps are when the case study findings are compared to guidelines developed in the literature, a literature study is carried out on the subject of ERP business cases. Then the case study is compared to findings from the literature.

The fourth question, asking what changes can be expected using a different approach where the guidelines developed in [1] would be used, is answered by comparing the found inconsistencies with the guidelines. A known way to build theories using actual data is by using case study research [19].

The research approach, shown in Figure 2, includes all the steps in the research process and shows that output of some steps is input of others.

![Figure 2. Research approach](image)

6. LITERATURE REVIEW

The goals of the literature review is to find articles on ERP business benefits and ERP business cases. Guidelines from these articles can then be used to compare theory with practice. The case study will be the practice where the guidelines from theory are compared to.

6.1 Business Benefits

Knowing if a business case is worth investing in, is only possible when both costs and benefits are taken into account. After the implementation the success of the ERP project case can be measured by checking if the benefits were successfully realized.

A business benefit can be defined as “an advantage on behalf of a particular stakeholder or group of stakeholders” [20]. Business benefits can be either tangible or intangible [21]. A business benefit is only successfully realized when the stakeholder of the benefit values it positively.

ERP implementation benefits can be grouped into several categories. A recent literature review shows that a lot of research on classification of ERP benefits has already been done [22]. The most structured, complete and detailed framework for benefit classification has five high level dimensions and twenty-one detailed benefit dimensions [10]. The five high-level dimensions are Operational benefits, Managerial benefits, Strategic benefits, IT infrastructure benefits and Organizational benefits.

When business benefits are not being reflected in the requirements in the Request for Proposal, for the suppliers it is hard to see how they could help the customer meet his goals and achieve his benefits. This makes it of large importance for the customer to communicate the benefits which they want to achieve to the suppliers. The goals should also be communicated with the stakeholders from the business departments. The stakeholders can then keep these goals in mind when designing business requirements and the requirements will be tested for meeting the larger scope goals [12].

6.2 Conceptual Benefit Framework

Current research which identifies benefits in the field of information technology does not give guidelines for benefit realization and assessment, while research which discusses benefit realization and assessment does not discuss the identification of benefits. This gap in the literature are supposedly closed with the development of a Conceptual Benefit Framework that can be used to identify, structure, realized and assess benefits of an ERP implementation. The framework is shown in Figure 3 [1, 22].

![Figure 3. Basic three-dimensional ERP benefit framework](image)

This paper will investigate if using such a conceptual benefit framework would have delivered better results for the case study and if the case study can possibly lead to reflection to help refine the framework.

The following section will describe the main part of this research, namely the case study analysis. The section thereafter will compare the findings from the case study analysis to the guidelines found in this literature review.

7. CASE STUDY

The case study is an explorative investigation of the ERP vendor selection process at Woonzorg Nederland. At first documentation on the selection process is reviewed. Starting with a review of the Request for Proposal, which is sent to a list of ERP suppliers.

Then we will look at other available documentation and hold interviews to look for non-documented knowledge. We expect to find a number of business benefits in the Request for Proposal, and possibly also some non-documented benefits from the interviews.

7.1 Request for Proposal

The Request for Proposal from Woonzorg Nederland contains five documents and a letter requesting information from the ERP vendors. The letter explains the purpose of each document and the cause for the request: the supplier of the largest information system at Woonzorg Nederland will stop providing support services for the system after 2009.

The first document is a checklist of functional requirements and business processes. The vendors are requested to indicate which requirements are met by their ERP system and which
requirements are not. The second document contains a diagram with the major processes and functions as Woonzorg Nederland sees them. The diagram is only meant for clarification of the current business processes and IT systems.

The third document contains a checklist of technical requirements. The vendors are again requested to indicate which requirements are met by their ERP system. The fourth document is a summary of business facts and numbers for 2005 and the fifth document is the annual report of 2004.

All the implicit requirements in the letter and all the explicit requirements in the two requirements checklists were analyzed and classified using the goal-design scale [23]. This scale makes a distinction between four levels of requirements: the goal level, the business (or domain) level, the system (or product) level and the design level. Goal-level requirements are business goals that can be verified, although only after some period of operation. They require more than only a certain IT product: it is also necessary to make organizational and managerial changes. The customer has to take responsibility for these requirements.

Business-level requirements outline the tasks and processes involved and require support for these tasks. System-level requirements describe transactions; what comes in and goes out of the product. Functions or features are identified here, without giving all the details. Design-level requirements specify a part of the interface of the product in detail.

When analyzing and classifying the requirements from the case study, business processes covering one or several system-level requirements were classified as business-level requirements. The results of the classification are shown in Figure 4. In Figure 5 the results for the functions/processes checklist are shown in more detail by displaying them categorized.

When benefits are written down in an ERP business case, they can be notated as operational benefits, tactical benefits or strategic benefits [9]. This scale does not tell anything about the level of abstraction of the requirements. In order to make a distinction between business benefits and other more detailed requirements, the goal-design scale is a better choice.

In the Request for Proposal, only one goal-level requirement was written down, that’s 0.2% of the total 497 requirements. This is the goal-level requirement / business benefit from the Request for Proposal letter:

- “Replace current information systems, i.e. guarantee continuity of business after 2009”

With only one benefit in the Request for Proposal, we had to investigate the possibility that there were more business benefits known, but that they were not stated in the Request for Proposal. We can think of two possible reasons for this: the benefits were only documented for internal use and not provided to the ERP vendors, or maybe the stakeholders knew others benefits but for whatever reason they did not document them. In order to investigate these assumptions, the internal Plan of Approach was analyzed and two interviews were carried out.

7.2 Plan of Approach

An important internal document which was not provided to the ERP vendors is the Plan of Approach. Among others, it elaborates on the goal and the background/justification of the project. The general idea behind not communicating this information with the vendors was to give them as less information as possible; just enough to create a decent proposal. The project team at Woonzorg Nederland considered this a good practice, because they expected that by sharing little information, the differences in knowledge level and experience between the vendors would be clearly visible.

In the Plan of Approach, our analysis indicates that there are some new requirements which are not in the Request for Proposal. These requirements were analyzed and classified in the same way as the requirements from the Request for Proposal. The results of the classification are shown in Figure 6, next to the results of the classification of all the documents from the Request for Proposal in once.

![Figure 4. Request for Proposal requirements analysis results](image)

![Figure 5. Requirements analysis results for functions/processes checklist (part of Request for Proposal)](image)

![Figure 6. Plan of Approach requirements classification](image)
investigate this, two interviews were carried out. Where the stakeholders knew of other benefits but they
then, one must not exclude, however, the other possibility
business benefits from the Plan of Approach:
Below, we provide a list of the goal-level requirements /
provisioning, Create flexibility to adapt information provisioning to
changing demands,
Create possibility to adapt IT systems to support new
developments (like personal services and strategy),
ERP should be sustainable for 10 to 15 years”
Then, one must not exclude, however, the other possibility
where the stakeholders knew of other benefits but they
consciously decided to leave them undocumented. In order to
investigate this, two interviews were carried out.

7.3 Interviews
The interviews included two team members who were
intimately familiar with the ERP project initiation and the
business environment. During the interviews, it turned out that
there is one such undocumented benefit. The benefit is not
equally important as the five other benefits, but it certainly
plays a role in the decision making process by the IT
department. This is the undocumented business benefit:
“Eliminate internal software development”
Two software applications were developed in the past and are
currently maintained by the IT department. The internal
software development caused some problems and the ERP
solution was supposed to replace functionalities currently
provided by the two software applications.

7.4 Communicating Benefits
With exception of the first business benefit, the other five
benefits were not communicated with the ERP vendors. As said
before, the general idea behind this was to give the vendors as
less information as possible; just enough to create a decent
proposal.
The business benefits were also not communicated to the
involved stakeholders from the business departments. Only the
project members from the IT department discussed the benefits
and were aware of them when they started the project.

8. FINDINGS & DISCUSSION
When the case study analysis, the result of the second research
question, is compared to the guidelines developed in the
literature [5, 9, 10], the result of the first research question, it is
evident that the approaches towards the ERP implementation as
described in the guidelines are quite different from the actual
approach in this case, as discussed next.

8.1 Comparison of theory and practice
Woonzorg Nederland did not start the project thinking of the
benefits to be realized. Instead they had one important benefit in
mind when starting this project: to be able to guarantee the
continuity of business after 2009, when the current major
information system will no longer be supported by the supplier.
Our findings identified that five more benefits were planned by
the IT members of the project team, but they were not
communicated with the suppliers in the Request for Proposal, nor
with to the stakeholders from the business departments.
We also found that the rest of the process from the case study is
difficult to compare with the guidelines from the literature (see
Section 6). Whereas according to the literature the next steps
could have been (i) identifying the benefits, measures and
owners, (ii) structuring the benefits, (iii) identifying benefits that
enable organizational changes, (iv) determining the explicit
value of each benefit and (v) identifying costs and risks [5], the
case shows a different approach. The project group (i) asked
business stakeholders to formulate requirements (apart from the
identified benefits), (ii) formulated technical requirements and
(iii) combined all the requirements in two documents (here also
not mentioning the benefits).
Involving the stakeholders costs a lot of their time and thus puts
a lot of pressure on the business activities of the stakeholders.
By involving them too much, the organizational results would
possibly suffer under the selection process. This did not keep
Woonzorg Nederland from involving the stakeholders, but
making them responsible for business benefits would have cost
them too much of their time. The project team also expected
that the person made responsible for a business change would
involve other people from the organization to do part of his job.
This would have made many people involved in the
organizational changes, possibly making the implementation
more successful but certainly putting too much pressure on the
time of the staff.
We also have to make the note that there are some similarities
between our findings and observations from the literature in
Section 6. First, the business requirements from the case study
can be categorized in three of the four balanced scorecard
dimensions which are also used in the ERP benefits framework
[9]. Second, we found that only the Innovation dimension is not
used in the requirements formulated by the business
stakeholders. However, we observe that Innovation has a large
share in the six benefits defined by the project team. So, the
matter that Innovation has such an importance lets us conclude
that categorizing requirements and benefits using a framework
based on the balanced scorecard could have been possible.
Integrating dimensions of automate, informate and
transformate [9] was not done in the studied case and it is hard
to imagine that this would have been possible with the
information formulated by the business stakeholders and the
project team. The same accounts for the operational, managerial
and strategic dimensions [10].
This comparison of the case study with the guidelines
developed in the literature answers the third research question.
The fourth research question then asks what changes can be expected using a different approach where the guidelines developed in [1] would be used, which will be discussed in the next section.

8.2 Potential improvements
This case study research supports the position that using the guidelines developed in [1] would have very likely delivered better results. The reviewed literature argues that when stakeholders from the business departments are periodically asked to think about the benefits of the ERP and about what they personally did to increase the chance for these benefits to turn out well, there would be much more awareness of ERP benefits in the organization. When there is awareness the project team is believed to be motivated to align their vendor selection choices with the business case, making it more feasible that the benefits will be achieved.

Making the stakeholders accountable for the benefits to be achieved would then deliver even better results, because they feel responsible for and share part in the project’s success.

Using the guidelines could have caused the project group to more extensively identify benefits and further identify measures and owners for every benefit. The benefits would have been used as a guide in the rest of the process and they would have been made available to the business stakeholders in the organization. This is why using the guidelines would have very likely delivered better results.

Categorizing every benefit and requirement using the Conceptual Benefit Framework [1] would have immediately shown when the focus is too much on certain areas. It would have been impossible to spend little effort in the other areas without noticing it. This is why using the Conceptual Benefit Framework would have also very likely improved the achievement of the business benefits.

A side note from the interviews, outside the scope of the fourth research question, is that these improvements would have cost a lot of time from people in the organization. Stakeholders would have very likely spread their responsibilities over other not yet involved people from the organization working for them and the total organization would be missing a lot of time which could have been used on usual business work. So the possible improvements would have been at a large cost.

9. LIMITATIONS TO THIS STUDY
There are some validity threats [18] to this research which are described in this section. First of all, we acknowledge that the external validity is clearly limited. A housing association is a very specific type of organization operating in an environment which allows a lot of time to postpone decisions and think them over. Companies in rapidly-changing business environments (for example high-tech companies) have to make their decisions very fast, there is less time for preparation of vendor selections. However, within the housing branch, Woonzorg Nederland is very similar to other organizations. This makes us believe that the conclusions from this research are also applicable for other organizations in the housing branch.

Regarding the internal validity there are also some cautions. The writer of this research paper may not always be objective during the research. This threat to validity was limited to a minimum by often reflecting with the writer’s two supervisors and with other students and teachers during peer review sessions.

Another validity concern stems from the matter that the goals were derived from the requirements documents by only one person. This puts in question whether all goals have been correctly derived. The writer acknowledges that when a second person would have participated in the same activity, the results could have been compared, discussed and possibly adjusted. However, at the time of completing this research, resources were constrained and it was not possible to include other researchers. The last caution for the internal validity is that only one person at Woonzorg Nederland was interviewed. Also interviewing other people from the organization would have given a more objective view of the ERP project.

10. CONCLUSIONS
From the comparison of the case study with the literature review, it can be concluded that Woonzorg Nederland has used a very different approach than the approach described in the guidelines from the literature.

At Woonzorg Nederland, the vendor selection process was not successful. The implementation never happened because the project was stopped by the board of directors. With the information acquired it is impossible to conclude whether or not the selection process would have been successful using the guidelines from the literature and the Conceptual Benefit Framework. However, it is very likely that using them would have delivered better results.

11. RELEVANCE & FUTURE WORK
These conclusions are useful for Woonzorg Nederland, to improve their ERP selection process. However, from the case study, there were no additions found which can improve the current guidelines (from Section 6). This case study does strengthen the foundation of the guidelines, although more research, and more case studies, are required to actually improve the guidelines.

A suggestion for future research would be to investigate several successful ERP vendors selections. Case studies of successful processes might also have different approaches than the guidelines from the literature, these different approach could possibly improve the current guidelines.

In order to verify the foundations of the Conceptual Benefit Framework one case study is not enough. Future research including several case studies where these foundations are verified will be necessary to prove the Conceptual Benefit Framework.

REFERENCES


