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## **DEVELOPMENT OF A RESEARCH DESIGN USING ACTION RESEARCH**

*A case study of ERP Requirements Definition Methods in praxis*

### **Extended abstract**

#### **Introduction**

To be competitive, companies need data on their internal processes, such as orders, materials, production costs etc. This is often drawn from multiple systems, and to increase efficiency it is necessary to compile all the processes into a single system (Vilpola). An Enterprise Resource Planning system can include all these processes and is therefore an immense and vital type of information system. ERP systems are some of the most difficult information systems to implement due to the complexity and large scope of its nature (Kumar).

With an increasing tendency to buy *Commercial-Off-The-Shelf* ERP systems (Botella P.), it can be difficult for companies to define the necessary business requirements. Most ERP vendors have their own methods for requirements analysis, but there is a risk of them being biased as a result of their incentive to sell – being more focused on the abilities of their own system, rather than the shortcomings (Olsen 2007).

They are often perceived as best practice, but this may not be optimal for small companies (Olsen).

The C-CEI method has been developed in order to offer companies a how-to method for requirements analysis in ERP procurement projects (Vilpola). The method combines operational and contextual analysis to gain a wider understanding of the organization. This paper reports from the first cycle design of the action research project.

#### **Purpose**

The purpose of this paper is to investigate the applicability of the C-CEI method in analyzing requirements, mapping limitations and prospects. The result will be a research design for the scientific process of investigating this. Therefore, this paper is not concerned with the actual execution of the research, but rather an applicable research design.

#### **Methodology**

Action research allows us to co-operate deeply with the case company, since it aims at solving problems instead of just describing them (Baskerville). The participative nature of the method allows both researcher and the representatives of the company to collaborate in the problem solving. The methodology has an interventionist approach, making the extraction of knowledge founded by the post-positivist paradigm.

The methodology has a cyclical structure, composed by five phases in each iteration: (1) diagnosing, (2) action planning, (3) action taking, (4) evaluating and (5) specify learning. This means that the reflection after the previous action has an effect on the foundation for the next action. This way of working results in a flexible and adaptive approach (Villers 2005).

In other words, this methodological approach ensures a more real-life view on the case study at hand and is regarded by many as the ideal post-positivist research method for IS research (Baskerville 1996).

This research will be executed as a case study of the small Danish company Liftup A/S. Hence, the assessment of the usability of the C-CEI method for requirements analysis is drawn from this case study.

### **Introduction to Liftup A/S**

The case study is about a small Danish sales company, Liftup A/S, which handles the whole value chain from product development, production and selling of high quality handicap equipment. Liftup is growing very fast with a strategic target of an annual 40% growth rate for the next four years. All functions need to grow and Liftup realized that their current ERP system Mamut is unfortunately not supporting the business functions to the extent of which it is needed to meet the new requirements. Liftup has therefore decided to replace the current ERP system and is looking for a new vendor. As part of vendor selection process, Liftup need to get clarity about their requirements for a new ERP system. They are concerned about the complexity and possibilities of ERP solutions, especially to procure a system, which does not meet their needs, especially buying modules, which might be to complex or not needed for Liftup. For the requirement collection process (analyze phase) the C-CEI method will be applied, in order to collect Liftup's requirements for production and inventory management processes.

### **Main issues of the investigation of the research**

The main professional issue in the paper is whether a scientific theory, in this case C-CEI, can be used to cover the systems requirements for Liftup A/S and which prospects and limitations are necessary, through a case study. To achieve this, some process issues are defined, which are quite intertwined with the applied research method, action research.

First the diagnosing of Liftup A/S is made, defining the primary problems in the company that are the underlying causes for the desire for change. Then we will work together with the company in the next activity, action planning, where solutions, ideas and timetables are decided upon to solve the issues. The action-taking phase is also participative, where the business requirements are analyzed and specified, resulting in a simple requirements specification. The evaluating activity includes assessments of whether the effects of the actions were realized or not – i.e. whether the C-CEI method did produce a more clear assessment of the ERP requirements in Liftup A/S or not. The activity of specifying learning is formally the last, but is actually an ongoing process (Baskerville). In this phase additional learning is applied to the theory, and where the actions were unsuccessful, new iterations can be planned upon.

### **Key findings**

The design of the case study will be the key finding in this paper

- A research design of how the above-mentioned professional goals are reached.
- A research design that is strict and true to the cyclic and evaluative structure of the action research, reaching the above mentioned process goals.

### **Future studies and limitations**

The main limitations of the action research methodology applied to this research is that it is context-bound and it can be difficult to determine if an effect is derived from conditions of the researchers, the methodology or the organizational environment.

For further studies, the initiation of another iteration in the action research cycle could be interesting. This paper seeks to create the optimal research design, where the next iteration could be the execution of the research. This would allow the action research to come to its right through the drawing of conclusions regards the effectiveness of the research design.

Furthermore, it could be relevant to look into more extensive theory on Stakeholder engagement, especially regarding the risk analysis. This perspective could especially be interesting in the organizational requirements defined in the Contextual analysis in the C-CEI method.

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## **MODERN INFORMATION TECHNOLOGIES FROM THE MARKETING PERSPECTIVE**

The result of any successful marketing campaign depends on the level of implemented innovations. Any progressive and modern company is trying to use as