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**SATISFACTION WITH THE SELECTION OF AN ERP SYSTEM.
EXPERTS OPINIONS FOR SME.****Abstract:**

In the big global markets, the business requirements for small and medium-sized companies (SME) are changing rapidly. With the fast international growth of even very small companies, their need for a professional IT and ERP system support is higher than ever. A study of the Center for Enterprise Research of the University of Potsdam analysed 1300 SME companies and stated that about 70% of the companies are planning to invest in an ERP System implementation or are in the middle of implementation. A trend towards a decline of the significance of an ERP System specifically for SME is not noticeable (cf. Gronau, 2012). There are significant trends where SME companies and ERP providers will have to work on the next 5-10 years. Firstly, due to the high internationalization specifically of German SME companies, the ERP provider needs to invest in very specific industry solutions which can be integrated. In addition, the core functionality and processes have to improve even more. Secondly, technology and IT architecture are gaining importance. Finally, ERP has to provide mobile solutions in the years to come. The study claims that the current need is under 50% but increasing. Similar to cloud computing where currently the companies are still hesitant on the one hand, but dependent on the technological details, more and more companies are interested in new solutions (cf. Gronau, 2013).

On the bases of the experience with business Case Studies, a Questionnaire has been developed and executed with over 60 business experts. All experts had years of experience in the field of ERP selection and implementation in the German and Austrian market. The main hypothesis that there is a relation between the satisfaction with an ERP system and the execution of the selection process could be confirmed along a set of criteria like budget constraints and time pressure. In summary; there is hardly a structured selection process and satisfaction with the ERP system is not measured but all involved people have an opinion based on "gut feel".

Keywords:

Critical Success Factors (CSF), Enterprise Resource Planning (ERP), Small and Mid-size Entities (SME), Decision Making, Selection.

JEL Classification: O39, M15

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Abstract

In the big global markets, the business requirements for small and medium-sized companies (SME) are changing rapidly. With the fast international growth of even very small companies, their need for a professional IT and ERP system support is higher than ever. A study of the Centre for Enterprise Research of the University of Potsdam analysed 1300 SME companies and stated that about 70% of the companies are planning to invest in an ERP System implementation or are in the middle of implementation. A trend towards a decline of the significance of an ERP System specifically for SME is not noticeable (cf. Gronau, 2012). There are significant trends where SME companies and ERP providers will have to work on the next 5-10 years. Firstly, due to the high internationalisation specifically of German SME companies, the ERP provider needs to invest in very specific industry solutions which can be integrated. In addition, the core functionality and processes have to improve even more. Secondly, technology and IT architecture are gaining importance. Finally, ERP has to provide mobile solutions in the years to come. The study claims that the current need is under 50% but increasing. Similar to cloud computing where currently the companies are still hesitant on the one hand, but dependent on the technological details, more and more companies are interested in new solutions (cf. Gronau, 2013).

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Introduction and Relevance

Strategic decisions for small and mid-size entities (SME) are very critical and more relevant than ever, given the need for globalization. Due to the historical approach and set up of these companies, business processes even for critical areas are not structured. Especially the question of "who makes the decision and how?" has rarely been analysed.

As an example, one very critical and special event is the process of IT acquisition. It is a one off strategic decision process and instrument in which usually the decider has little or no experience. This acquisition is a fundamental cost factor. In a lot of industries in mid-size companies it is over 5 % of the yearly turnover (cf. Biermann, 2005). The decision for one specific package defines not just the IT framework with hard- and software, the selected system is the backbone for all business processes. The interviews with industry experts provide a clear overview of the current practice and support the hypothesis that awareness at senior management level from the very beginning would lead to successful long-term decisions. A clear and structured approach should be followed as well as experience from large entities leveraged for SME considering their specifics.

Definitions

The key terms are defined at high level for the purpose of this paper.

Definition of a strategic decision making

The term strategic indicate something long lasting, using the big picture. In history the term usually was connected to war and military. In the 19th century it became more related to strategic management. So, long term strategies to run the businesses. The primary focus is on strategic decisions of top managers of a small, possible medium size company. There is a variety of definitions of the term decision. In science the term management decision making is very often synonymously threated with the preparation process, the selection and the decision itself. "Decision making comprises three principal phases: finding occasions for making a decision; finding possible courses of action and choosing among courses of action" (Simon, 1960 reference by Harrison). For the purpose of this paper decision making is defined as a process which is finalized with the decision itself in the end. This process needs a specific structure and unfolds over weeks and months, with management political power and role play to end in a final result, the event of a decision (cf. Garvin, 2001).

Definition of ERP Systems

The term stands for "Enterprise Resource Planning" a confusing term to express a very simple concept, managing all areas of your business efficiently. "ERP Software is a strategic tool that unifies and manages the core process of a business to improve client and supplier interactions as well as equipping the business with well-defined and controlled processes." (Dwivedi, 2007, p.27)

Analysis

Reviewing literature for the specific subject of IT / ERP decision making it shows that IT /ERP selection (and implementation) is getting more and more popular in the recent years. Multiple cases have been analysed (cf. Verville et al. 2002) and many different approached reviewed (cf. Verville et al. 2003a, 2003b, 2005). The very critical part of this strategic decision making process can be divided into three key areas: the selection process itself as a process (structure), the characteristics to be evaluated and the people making the decision.

The decision making person is a key influencer for the selection of the ERP software package. The technical background, the relationships to consultants, colleagues and competitors matter, as well as the advice and experience of friends and other managers or CEO's.

The literature summarize that there are a lot of similarities for the execution of the acquisition process itself. The key factors are taken for the purpose of this paper: planning, the information search process, the (pre-) selection process, the evaluation process, the choice process and the negotiation process (cf. Verville, 2005). Mainly these steps have been taken for the development of a detailed selection process.

According to many researchers, more important as the process itself are the characteristics chosen to evaluate the ERP system. The best fit of these characteristics, it's evaluation and impact on selection is the key to a measurable, successful implementation. There are multiple studies with a literature comparison of the influencing characteristics for the ERP selection. Each list has a slightly different research background as well as completely different hypothesis as a basis. An intensive literature review about the selection criteria has been conducted; different studies have been taken into consideration and clustered as a basis for the expert interviews.

Related Hypotheses

The software selection of an IT/ ERP package covers a wide range of internal and external factors and actors that engage in the strategic decision-making process. Looking at the first part of this very complex strategic process the time taken for it and the people involved it are key factors which will be considered for this paper. The quality of the execution of the decision making process is highly important and includes a lot of variables creating hypotheses. Three key hypotheses have been defined as an underlying approach for this research paper.

To ensure a measurable successful selection the following three hypotheses have been taken:

- H1: A structured selection process is beneficial for the satisfaction with the chosen ERP system.
- H2: The decider has to involve a knowledgeable team for the satisfaction with the final selection of an ERP system.
- H3: Cost and Time are most relevant factors. Time gets much more important even at very small companies. Both factors have an influence on the satisfaction with the ERP system.

The author tested the wider area with executed case studies and expert interviews which lead to some results to be reviewed. They have been added as a fundamental part of the questionnaire executed with the ERP professionals where they have been challenged. The results of the questionnaire have been tested and analysed in this paper very specifically according to the three mentioned hypotheses.

Research Method – Questionnaire with ERP Professionals/ Experts

Situation/Analysis and Execution.

At the beginning of 2014 the author got the opportunity to extend the research and get input of a much wider group of the same quality of experts. In combination with an event there was the possibility to position a questionnaire to a wide group of experts. This developed questionnaire basically followed the main question of the semi-structured interview guidelines (see attachment). A group of 65 experts could be obtained to answer the questionnaire. Their relevance as an expert could equally be compared to the demographics of the expert interviewed.

Demographics:

Of the involved 65 people, fifty-eight have been men and seven been a women.

Over 50% of them have more than 10 years of work experience in the relevant field of expertise and another 25% over 5 years. The rest has still more than three years relevant work experience. So, all involved people could be classified as an expert.

All of them represent experts of medium sized companies according to the definition and the company is a production company including logistic and development in the Alpine Region either Bavaria (60%) or Tirol (30%) or other like north Italy.

According to the mentioned demographics the results are comparable and fit as a quantitative addition to previous research executed by the author e.g. the results provided by the expert interviews.

Results

The people answered the questionnaire in writing without the possibility to discuss the results in detail. Given the format of the questionnaire the results are very much comparable with the results gained at the expert interviews so it is a quantitative support to all relevant areas. Of the 65 results five have been invalid and couldn't be considered for further evaluation.

The question "why a new system was selected?" was answered using the same categories as the expert interviews. In sum about 2/3 selected a new system due to future requirements of international growth. The remaining 1/3 due to the need of replacing the old system or a merger situation. The companies spend about 27% of the overall time on the selection process in relation to the overall time invested for the entire process including the implementation and go live. In terms of decision making people, the decider is most of the time the owner or company lead considering at least some input of the relevant teams. Still 20% of the leaders made the decision independently of their departments and knowledge experts. In terms of the use of a process almost half of the companies used a process to select and implement the ERP System but about a third didn't define the requirements for it. In terms of the key criteria identified time and cost pressure on a scale where 10 is very high time or cost pressure, the companies are on 6.7 for time pressure and 4.9 on cost pressure. So, time pressure is mostly more important.

Extended Results of this Research

An event was used in the beginning of 2014 to take the chance to distribute this questionnaire to ERP professionals (see appendix). Of a much wider group, 65 professionals chose to answer the questionnaire, of these 60 valid results could be evaluated. The professionals support all areas of the chosen scope for this research as well as expertise and demographics.

The 60 valid results follow the provided demographics:

Sex:	54 men	6 women		
Work Experience	14 under 5 years	11 up to 10 years	30 up to 20 years	5 over 20 years
Size of Company	15 work in a small company	45 in a med-size company		
Working field	47 in Production	13 in ERP / IT		
Country	18 Austria	40 Germany	2 North Italy	

Table 1: Demographics ERP Professionals, created by author 2014

The questionnaire was handed out and answered anonymously. In relation to the qualitative expert interviews similar, comparable questions have been asked but the answers have been much more summarized due to the fact there was no conversation about more details of the taken approach. All ERP professionals had been involved in an ERP selection process, mainly as the decider and further more have been involved in the implementation and maintenance of the ERP system later on. Table 1 above, shows all relevant demographics of the involved professionals.

Results:

The results have been evaluated in relation to the hypothesis and therefore very specifically in relation to the overall efficiency measured by the satisfaction – the dependent variable.

Results according to Hypothesis 1

Questions 2c and 2d checked in detail the time taken for the selection of the ERP system. This is an indicator verified in previous expert interviews for the intensity of the selection and for the selection process structure taken. As less time is considered for selection as fewer a process have been used at all.

The result shows that on average less than 25% of the overall time was taken to select the ERP system. People feel satisfied with the decision but the people asked have been the deciders and satisfaction is never been measured. Very similar to the results of the Expert Interviews the results are just based on the gut feel of the people.

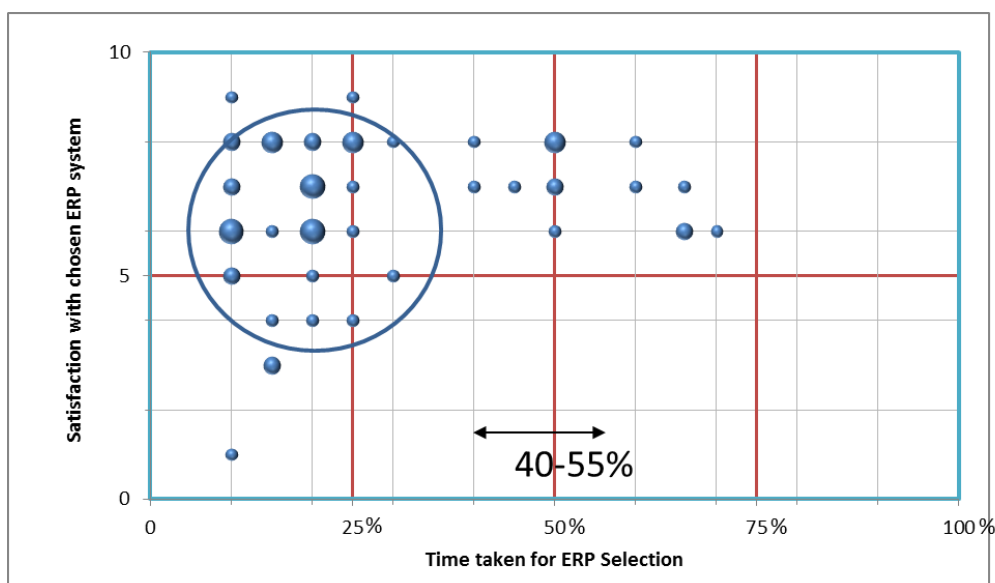


Figure 1: Quantitative results of ERP professionals regarding H1, created by author 2014

The size of the bubble indicates the amount of people voting for the same result. As smaller as less people have the opinion, as bigger as more. A significant amount of time has to be taken for the evaluation of the ERP system. The recommendation is about 40-55%. Even with much less time taken, the average is 27%, the people still do feel kind of satisfied with the chosen ERP system. But as well due to the fact the questionnaire was provided by the deciders.

Question 2g). The direct question about the use of a process for the selection of an ERP system was asked as a pure yes/no question. Of the 60 valid results 31 answered, they used a process.

Overall hypothesis 1 could be supported; a structured selection process is an indicator for the efficiency of the selected ERP system.

Results according to Hypothesis 2

Questions 2e and 2f checked in detail the decision people involved in making the decision or better selecting the ERP system. Who is responsible for making the decision is a key topic but not such a clear indicator towards the efficiency of the selected system.

The result shows a clear indication towards the involvement of the key knowledgeable team supporting the decider towards the selection of the ERP system.

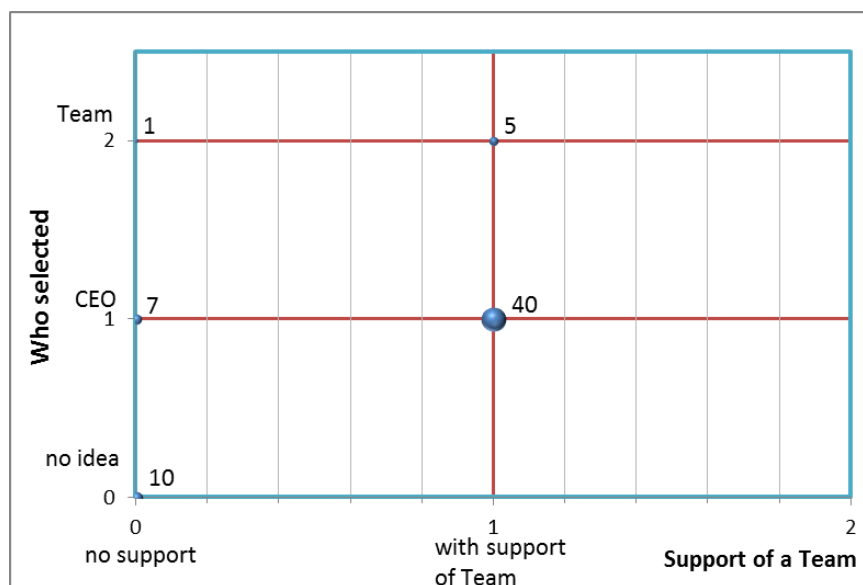


Figure 2: Quantitative results of ERP professionals regarding H2, created by author 2014

Who was responsible for making the decision was another key topic. It was differentiated between the decider and the supporting team. For about 30% the decision was made without any team involvement which seems usual according to the specific expert interviews.

The board, CEO or owner needs to take the responsibility for the decision, but he needs to take the full support of a team providing all detailed requirements. The hypothesis 2 could be supported as well that there is a relation between the decision making person and the team supporting the decision for the selection of an ERP system.

Results according to Hypothesis 3

Questions 2h checked if any of the requirements towards a system have been specified at all and 2i and 2j checked in detail the identified most relevant decision criteria 'time pressure' and 'cost pressure' in relation to each other in relation to the efficiency measured via the satisfaction.

Looking at the requirements cost and time pressure have been identified as key factors in this empirical research. Even at SME companies where the assumptions is, there is a shortage on budget the an-

swer is mostly on time pressure – see Figure 3. The qualitative finding could be supported that time gets more important as long as the ERP system seems economical.

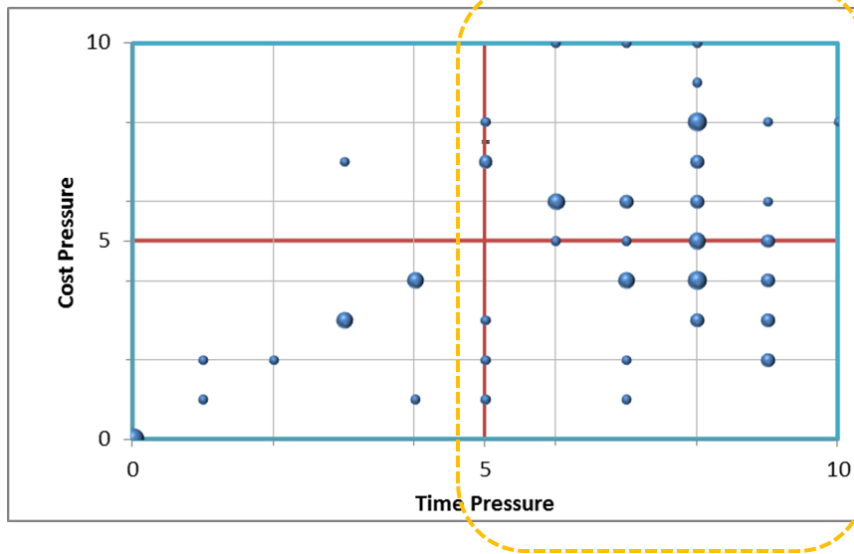


Figure 3: Quantitative results of ERP professionals regarding cost & time, created by author 2014

As stated with Figure 3 above the pressure on time is much higher, more circles are in the right area pressure on time 5-10 than generically on the top part cost pressure 5-10.

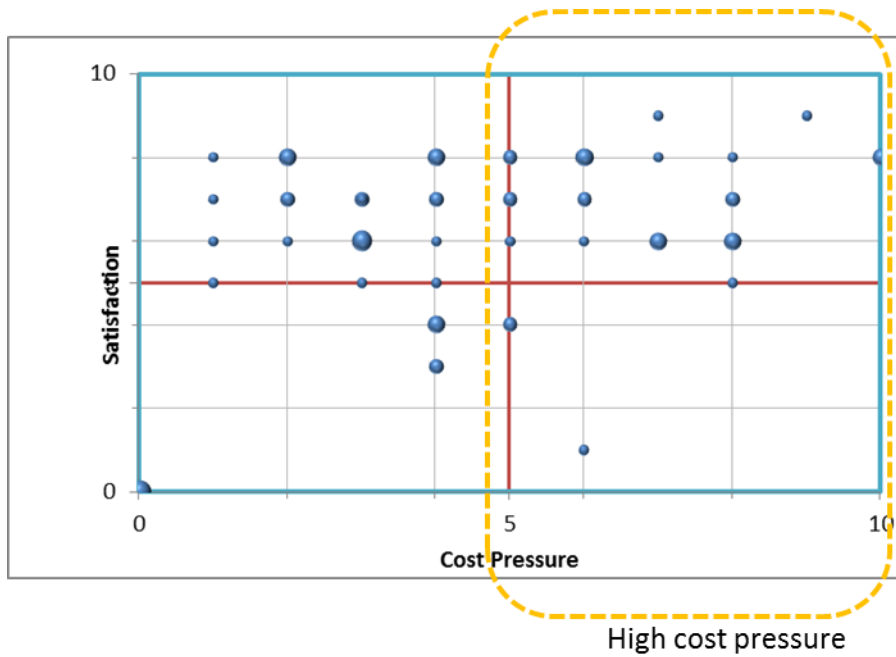


Figure 4: Quantitative results of ERP professionals regarding cost & satisfaction, created by author 2014

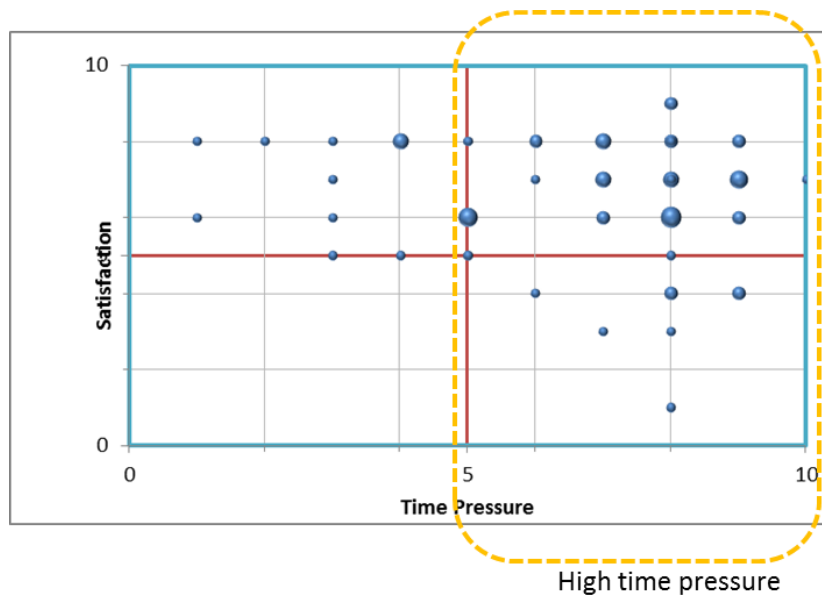


Figure 5: Quantitative results of ERP professionals regarding time & satisfaction, created by author 2014

In relation to the satisfaction with the system the companies felt they chose the good system irrelevant of cost and time pressure.

The previous slides indicate that, irrelevant of the indicators and measures, the experts are satisfied with the chosen ERP system. The last question clarifies this impression.

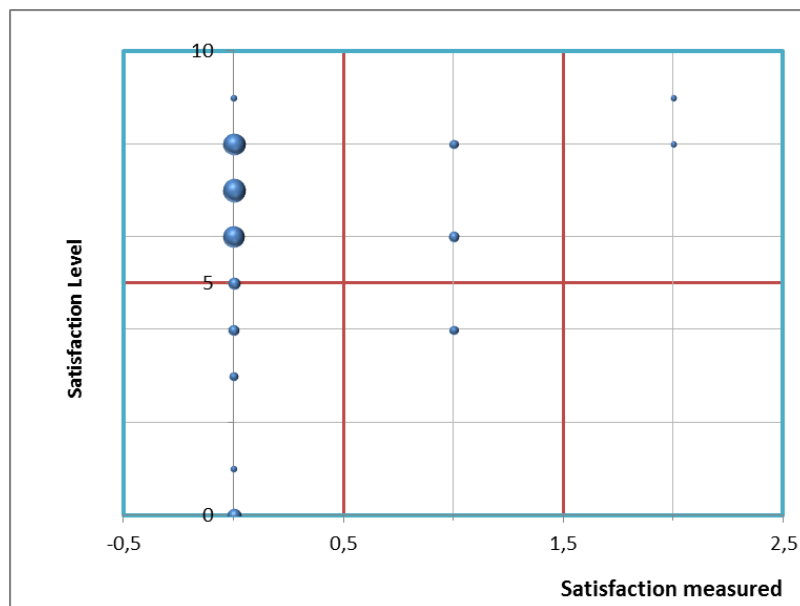


Figure 6: Quantitative results of ERP professionals regarding satisfaction measured, created by author 2014

The experts have been asked how they evaluate the satisfaction with the system. They base it mainly on “gut feel”, less negative feedback and a small error log. But there was never an evaluation whether the system fulfils the requirements. Overall the experts feel satisfied with the selection of the ERP system but there is no measurable confirmation and mainly the feedback is based on the view of the key decider.

In sum, the questionnaire executed with 60 ERP professionals support the hypotheses taken with the qualitative research approach. It can be confirmed that the defined independent variables are relevant for the decision of an ERP system and the three hypotheses of this research can be substantiated.

Concluding Remarks

Making strategic decisions is a key topic for SME companies especially in a fast moving business environment. To remain competitive in a global and automated world most of the companies face the major strategic decision to select for an IT / ERP system. Given it is usually a one-time decision making process they face it with little or no experience.

The developed model has been discussed with experts as well as the most critical success factors and people approach. The expert interviews with CEOs and IT Leads as well as scientific experts could mainly confirm the three hypotheses for SME companies:

- Hypothesis 1: (Structured Process) could be confirmed.
- Hypothesis 2: (Decision People) could be confirmed.
- Hypothesis 3: (Cost & Time) reviewed main CSF in detail and could be confirmed.

SME companies need be enabled to make this very important strategic decision by following a structured selection approach and involve multiple internal and external people in the decision making process.

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Appendix - Questionnaire with ERP Professionals of the Alpine Region:**1.) Demographics:**

- a.) Sex: Men _____ Women ____
- b.) Work Experience in Years _____
- c.) Industry _____
- d.) Size of the company _____ (number of employees)
- e.) Country _____

2.) ERP Questions: (please mark with a cross)

- a. Does the company have an ERP System? Yes / No (*if the answer is NO then you are finished – thanks a lot for your participation*)
- b. Why was the ERP System implemented? Growth/ Internationalization/ old system replaced/ merger/ other?

- c. How long was the overall ERP life cycle process – implementation?
months: _____
- d. In proportion – how much time was dedicated to the selection of the system? (% of overall time) _____
- e. Who made the decision for the ERP system/ position?

- f. Did this person – decider support of a selection team or other people? Yes / No

- g. Was there a structured selection process available/ followed? Yes / No
Which one? _____
- h. Have all requirements for an ERP system been identified? Yes / No

- i. Did you have time pressure? Scale 1-10
Not time pressure 1 2 3 4 5 6 7 8 9 10 high time pressure
- j. Did you have cost pressure? Scale 1-10
No cost pressure 1 2 3 4 5 6 7 8 9 10 high cost pressure

3.) Satisfaction

- a.) Are you or are all users satisfied with the chosen ERP system?
Scale 1-10 where 1= very dissatisfied
Very dissatisfied 1 2 3 4 5 6 7 8 9 10 very satisfied
- b.) Do you measure the satisfaction with the system? (never, sometimes, always) _____
- c.) How to you measures the satisfaction with the system?

Thanks a lot for your participation!!!