

3. EMPIRICAL APPROACH METHODOLOGY

The present paper aims to improve understanding under which circumstances a SME should formalize its processes. In Part 2, Theoretical Background, relevant literature was scrutinized to identify factors that affect PF. Existing literature describes extensively which factors influence PF and its success; however literature seems not to be able to explain when a SME should formalize its processes. The empirical part will add to the existing knowledge by suggesting a new categorization of the already identified factors, allowing assessing when a SME should formalize its processes.

3.1 Description of the Empirical Approach

The main research question: “When should a SME formalize its processes?” springs from the observation of a mSME attempting to adopt an ERP system. The observations were made by the researcher during an internship in a Mexican mSME. The observations made served as a starting point for investigations into the success factors, drivers and impediments of PF in SMEs, working from the particular example of the production planning process.

Semi-structured interviews were conducted to illustrate whether or not the factors mentioned in relevant literature are applicable in the particular case. The interviews were conducted with the top management of the SME in question, with a consultant for implementation of the acquired ERP and with 3rd party experts.

A case study on the process formalization efforts of the SME is used to illustrate whether or not the mentioned factors affecting PF are given in the case of the company and whether or not from the existence of certain factors a conclusion can be drawn with respect to the expectable success of PF in a SME. The researches supposed, as mentioned in the conclusions from the Literature Review that the PF-affecting factors identified would appear to be rather continuous, as opposed to digitally ‘present or absent’. Consequently the identified factors were grouped as “given in the company in question”, “partially given” and “not given” in the respective conclusions.

Based on the analysis of the interview and the case study a new categorization of factors affecting the outcome of PF in SMEs is suggested in order to improve the practical relevance of the categorization.

3.1.1 Analytical Approach

Laying the base for the later analysis, Chapter 4 Data Collection, describes the SME in question and the concrete case of the efforts undertaken to improve its production planning process as well as the perceptions and opinions of the SME's top management and 3rd party experts regarding improvements via PF.

The interview partners were asked which factors they recognized as influencing PF. Congruent with this study's design, this question was not aimed at confirming findings from the literature review, but rather at unveiling new aspects of the phenomena under research. The interview partners from within the company in question were additionally inquired upon their perceptions of the production planning process and the related efforts of improvement.

The data displayed by the case study of the SME in question positioned the company in its context, allowing to better appreciating the data displayed in the case describing the company's improvement efforts.

Both case descriptions – the description of the company as such and the description of the concrete improvement efforts - were used to illustrate that the categorization of factors affecting PF used in the current literature are not sufficiently meaningful for answering the research question when a SME should formalize its processes. Building on that insight, a new categorization of factors into

- Factors that affect the formalizability (“Formalisierbarkeit”)³ of a process
- Factors that affect the capability of formalization of a SME

is proposed.

³ “Formalizability” (“Formalisierbarkeit”) throughout this paper strictly refers to the possibility to formalize a process and to the ‘degree to which a process can **be** formalized’. The meaning of the word used in this paper is opposed to ‘the process’ ability / capability to formalize’.

Below the graphical expression of this paper's analytical approach (cf. Figure 2).

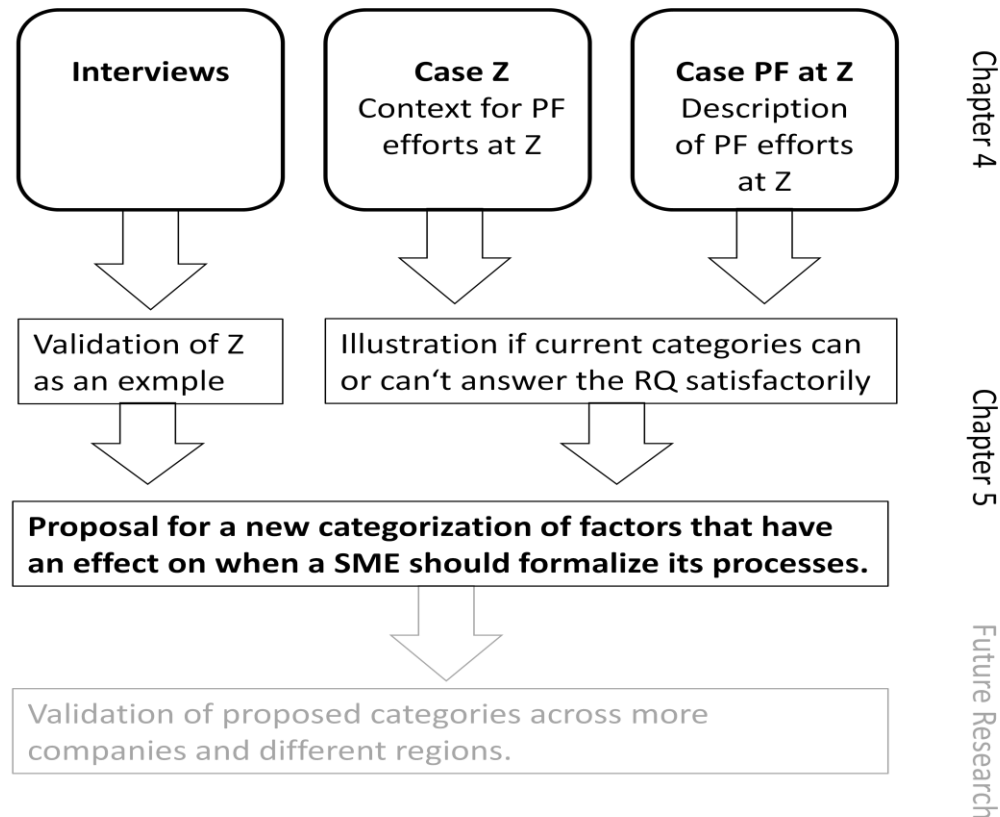


Figure 2. Analytical Approach. Own elaboration.

The framework proposed in this paper allows mapping the state of a given process with respect to formalization and the state of the SME with respect to capabilities of formalization. Depending on the quadrant the company finds itself for a given process, the manager can concrete derive plans of action; either improving formalization capabilities of the company or formalization-ability of the process.

Besides the case study, the interviews conducted represent the main pillar of the empirical study. The following section justifies their design, their aim and the selection of interview partners.

3.1.2 Interview Design

The exploratory character of this study implies a qualitative interview approach over a quantitative one. Drawing on Sigglekow (2007) and his reasoning for a theoretical sample as it allows to make use of exceptional research opportunities a theoretical sample of interview-partners was selected. Their particular insight into topics of interest, their differences in backgrounds and thus the possibility to triangulate or at least enrich one interview with another were criteria for selecting interview partners. The particular interview partners and the reasons for their selection are as stated below:

- 3 top managers from the ERP-implementing SME (GenDir, AdminDir and ProjMng); interviews helped gaining insight into strategic reasoning behind ERP implementation, in the ERP implementation process and its evaluation and into the particularities of the company under research.
- Implementation Specialist from the ERP developer: interview helped gaining insight into most common problems of implementation thus helping to better understand the criteria for process formalization capability of SMES.
- Top manager from German SME with extensive experience in PF; interview helped gaining insight into country- and industry specific points of view held by the scrutinized company's managers.
- Organizer of SME network; interview helped gaining insight into drivers of PF springing from networks and lend a more theoretical approach to PF in SMEs

The interviews were designed specifically for the recipient while maintaining a common structure as to help interpretation. They were held in English, German and Spanish language with transcripts translated into English where necessary. The interviewed were assured of anonymity, personal interview data was not to be shared with 3rd parties other than the thesis advisor.

The interviews aimed at three goals, depending on the party interviewed:

- Identify whether the SME in question was an 'extreme' or peculiar case unsuitable to draw upon in suggesting a new and improved categorization. This was done by asking the AdminDir, GenDir and ProjMng on the factors that in their opinion influence the

success of PF. The factors named by Z's top management significantly differing from those identified in literature would indicate an unsuitable case to draw upon; greater congruence between literature and Z's management's perceptions indicate a suitable case to draw upon.

- Complement and augment the positions mentioned by Z's top management by asking related (ImplConsl; NetOrg) and unrelated (GenDirGER) 3rd party experts on their perception of determinants of PF adoption success. Capturing the statements of 3rd party experts allowed to better identify and understand particularities of Z.
- Collect data to triangulate data used in the case studies, in particular in the case study on production process planning improvements attempted at Z.

The qualitative character of the interviews, their tailored-to-the respondent design and the internal and external expert interview partners selected allow for significantly enriching the data presented in the case studies, creating valuable information for improving the existing knowledge by adding a decisive application-orientated stance.

Particularly for the case studies biases have to be avoided and minimized. The following outlines how the biasing effects of researcher as actor were accounted for.

3.2 Warrants against Biases

Any research this close at the heart of a company as the one presented in this paper, and any researcher engaged as profoundly as the author was during his time as intern at the company in question, draw upon them questions regarding possible biases that shape the outcome of the research. In the following possible biases and how they were accounted-for in the work are described. For dealing with the actor / observer issue it is drawn upon Taylor & Bogdan, 1984.

Regarding the researcher's position it is stated that the researcher has been engaged at the SME under examination since July 2008. From July 2008 till December 2008 he was hired as intern, from January 2009 to date is working as consultant for the company on an hourly basis. As an intern he was hired as "*assistant for ERP Implementation in the administrative area*"

(“Auxiliar en la implementación del sistema ERP en el área administrativa.”) and as “*assistant for the implementation of project controlling*” (“Auxiliar en la implementación del control financiero de cada proyecto”). He reported and kept reporting directly to the GenDir (“You [referring to the researcher] would be reporting directly to me, direct any question directly to me or to the AdminDir” - “Tu [referring to the researcher in his function as intern, *the author*] me reportarías directamente a mí, cualquier pregunta sería conmigo o con [...] [la] gerente administrativa”) and was not directly responsible for the implementation’s success (“That [referring to the ERP implementation, *the author*] would not be fully your responsibility [you would] only help in this issue” - “Esto no sería enteramente tu responsabilidad sino solamente apoyar en esta tarea.”).

With regard to the sample used in the study Eisenhardt and Graebner (2007) note that the selection of a sample in a study such as the presented serves theory *building* not theory *testing*, thus a theoretical sample, resembling an experiment, is appropriate. Yin (1994) furthermore notes that a single sample can give us unusual insights into procedures and thoughts. Drawing from the mentioned authors and from Carlile & Christensen (2005) I re-iterate the purpose of the present paper as an observation and description of a phenomena (success of process formalization in SMEs) and not as a testing of a built theory. Thus a theoretical sampling of the case is justifiable and appropriate.

With respect to the general problematic of actor and observer being confined within one person and its effects on descriptions of the company, its processes and its implementation efforts the validating effect of triangulation were applied by comparing the researcher’s statements to observations of other company members. Furthermore, and augmenting the triangulation, data created at the time in question, and thus before starting the research endeavor, will be provided.

As outlined in 3.1 the research draws on descriptions of processes and of the ERP implementation phase to help answering the research question. Descriptions, as narrations of a past, can always be influenced by today’s perceptions and are thus always prone to biases (see e.g. Rubin & Greenberg, 2003). By triangulating the descriptions with interviews and by drawing on documents created at the time in question the most adequate possible descriptions are assured.

Respondents, in this case including the researcher (particularly on the topic of ERP implementation) are presumably reluctant to disclose on personal failures. Bearing this in mind, the interviews with personnel directly responsible for implementation or successful process design and execution will be asked in a general manner on success factors. Their statements were triangulated by interviews with the SME's stakeholder and other sources of data regarding process and implementation success.

The next chapter describes the data collected with the described research method and under consideration of the outlined challenges in order to avoid biases.