Applying Product Configuration Systems in Engineering Companies: Motivations and Barriers for Configuration Projects

This Ph.D. thesis looks into the application of configuration systems in engineering companies, and how configuration systems can be used to support business processes in engineering companies. Often the motivation stated by researchers and practitioners is, that a configuration project is a strategic initiative, see (Hvam, 2001; Edwards & Riis, 2004; Hvam et al., 2004; Edwards et al., 2005; Haug, Ladeby, & Edwards, 2007; Hvam, Mortensen, & Riis, 2007; Hvam, Mortensen, & Riis, 2008). The fundamental question in the field of strategic management can be formulated as: "...how firms achieve and sustain competitive advantage" (Teece, Pisano, & Shuen, 1997, pp.509) This question has puzzled academics and preoccupied managers for the last century. Yet, it seems there is still no consensus regarding the meaning of strategy, and how strategy works. Type in the word "strategy" on Amazon.co.uk and 76,133 books apply. Type it in on Google scholar and 8,580,000 homepages apply. Obviously, strategy is an important subject. However, the subject also seems to be difficult to perceive. Although this thesis is not about strategy, or strategizing, I would like to pursue the definition of strategy one step further. "[In order] to be strategic, a capability must be honed to a user need (so that there are customers), unique (so that the products/services produced can be priced without too much regard to competition), and difficult to replicate (so that profits will not be competed away). (Teece & Pisano, 1994, pp.539) Are configuration projects in engineering companies established as strategic initiatives? We do not know. This thesis analyse the application of configuration systems in engineering companies by asking and answering the following meta-question: "How are configuration projects carried out in engineering companies?" Product configuration systems are a fairly young field of research, and the literature used in this project is presented in chapter 2. Chapter 3 begins with a discussion of the scientific point of view, and develops the research questions are by an investigation into shortcomings and strengths of the contributions presented in the previous chapter. Chapter 4 establishes a frame of reference concerning the configuration world. Chapter 5 develops a typology that identifies four different kinds of configuration systems, and chapter 6 elaborates on the prerequisites for configuration. Chapter 7 sets the stage for the two case studies described in chapter 8 and chapter 9. Chapter 10 discusses the results and chapter 11 presents the concluding remarks of this Ph.D.