Identifying and Managing Engineering Design Requirements for Emerging Markets

In the last decade, emerging markets have become a significant force in the world economy. It has become increasingly important for global manufacturing companies to develop products for emerging markets, which appropriately address local needs and requirements. Therefore, it is necessary, especially for those companies originally from developed markets, to acquire an in-depth understanding of particular design requirements in emerging markets in order to adapt both company products and approaches in such contexts.

Prior studies on the identification and management of design requirements have predominantly been conducted in the context of developed countries and relatively affluent markets. Emerging markets are distinct from developed markets in terms of numerous contextual factors, e.g., regulatory environments and competitive landscapes. These factors influence the requirement identification and can lead to changes in design requirements. However, the influence of these factors have not been explicitly studied in the context of emerging markets. In addition, current studies on design requirements focus on user requirements, whereas requirements from other perspectives have received limited attention. There is a need for an overview of different perspectives in requirement identification for manufacturing companies and their corresponding assessments in the context of emerging markets.

Therefore, this research project is motivated to 1) investigate the process of identifying and managing design requirements for emerging markets, with the purpose of examining the challenges and gaps in developed-market companies’ current practice and; 2) support companies in identifying design requirements for emerging markets with an efficient approach. This research project has been performed as a close collaboration between academy and industry. Two empirical studies have been conducted with Danish and Chinese manufacturing companies employing survey and case study as research methods. These two studies demonstrate that for a developed-market company, to identify design requirements is more challenging for emerging markets than that for home markets. The key findings suggest that the process of identifying and managing design requirements, which usually apply to developed markets, should be adapted for emerging markets. In such adaptions, particular attention should be paid to 1) understanding competitions and regulations in target markets, 2) selecting appropriate sources to gather information, and 3) being flexible in reacting to the dynamic and complex emerging-market context.

Based on the findings, the Perspective-oriented Requirement Excellence toolkit has been developed to support companies with the preparation and planning of requirement identification, especially for unfamiliar markets. This toolkit provides a structured framework to organise design requirements, which supports the identification of gaps in the existing requirement set, and assists the communication of design requirements between different stakeholders. It also provides a systematic approach to plan the process for identifying design requirements, which improves the efficiency in terms of utilising expertise and allocating resources. The toolkit has been evaluated at a workshop, which demonstrates the value of this method in supporting a real case practice.

This project has been conducted as interdisciplinary research. It supplements with a theoretical contribution to requirement engineering and engineering design, which in this case is an advanced understanding of the perspectives considered in requirement identification, and co-evolution of design requirements and product development processes in emerging markets. It also contributes to innovation management with implications that support managers in planning process, and allocating resources to identifying and managing design requirements in product development projects that target at emerging markets.

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