How business models impact the choice of the IT architecture

Graduate

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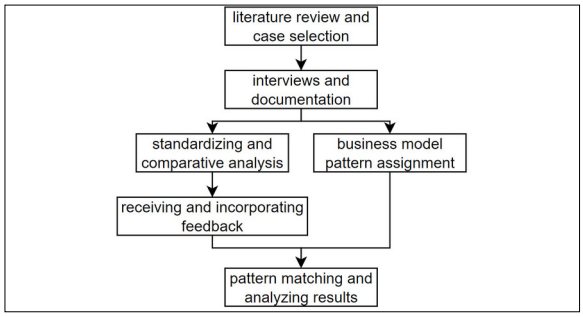
Introduction: The manufacturing industry is undergoing digital transformation, with companies leveraging technology to enhance operations and customer relationships through smart services. Smart services involve communication and cloud technologies to gather data and information. The data obtained can lead to new services such as predictive maintenance and remote monitoring, and enhance customer relationships through personalized service offerings and proactive customer engagement. Despite the benefits, implementing smart services is not without challenges such as lack of resources and expertise, transitioning from product-centric to service-centric business models, and technical and commercial challenges related to digitization. Previous studies have primarily focused on the business aspect of smart services, leaving a gap in knowledge on the technical implementation of digital services and the underlying business strategy decisions. To address the gap in understanding the technical and strategic considerations involved in smart service implementation, this research examines specific case studies through expert interviews to illustrate how business models influence technical implementation. The findings are published in a scientific paper aiming to better understand the considerations involved in successfully implementing smart services in the manufacturing industry.

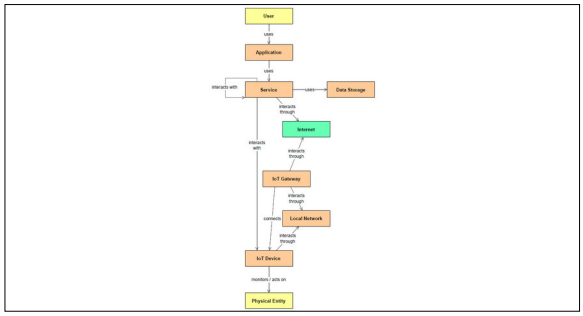
Approach: The scientific work is based on a qualitative study that investigates real-life use cases of smart services. The research methodology, shown in Figure 1, includes expert interviews with companies offering smart services to understand their technical implementation and business models. The use cases had to meet certain criteria (they are offered to business customers, consist of physical and digital components and use IoT technology) and were narrowed down to 19 companies after an initial screening. Based on the information gathered in the interviews with the companies, the business models were assessed using the business model patterns proposed by Gassmann et al. while the conceptual model presented in ISO/IEC 30141:2018 were used for the technical implementation aspect. The conceptual models were standardised and the basic conceptual model shown in Figure 2 was formed. A comparative analysis identified 11 different generic smart service patterns with different characteristics. Finally, the distribution of the business model patterns across the generic smart service patterns was investigated to identify possible relationships or influences on the technical implementation of the smart service.

Conclusion: The paper's conclusion discusses the study's results, which analysed the relationship between the business model and the technical structure of smart services. The analysis of 19 case studies revealed that business strategy decisions have an impact on the IT architecture of smart services. This influence is characterised by frequent co-occurrence of certain business model patterns and technical structure patterns, as shown in Figure 3. The study results provide a basis for further research in this area and can be used by companies in developing and improving smart services. The results also suggest that the identified generic patterns for smart services can help companies make fundamental decisions and overcome challenges at an early stage. However, further research is needed to investigate the influence of individual business model elements and use cases for smart services.

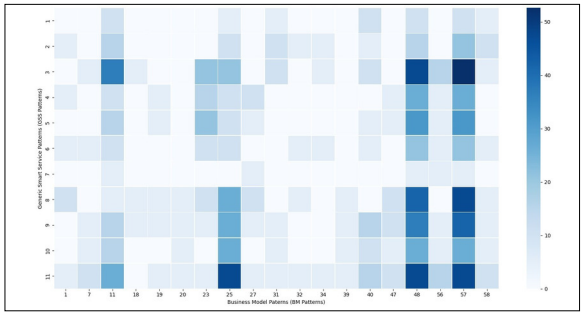
Selected methodology for the qualitative study
Own presentment



Base Conceptual Model
Own presentment



Contingency table of BM vs. GSS patterns
Own presentment



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