Smart services – are German companies ready to take up the challenge?

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Problem/Goal

Smart services are a hot topic in German business right now. This is because they offer companies a promising opportunity to expand their existing portfolio of services and, with the help of digital technology, carve out new areas of business. Large enterprises are already busy investing in human resources and infrastructure with a view to rolling out the first of a new generation of smart services. By contrast, many small and medium-sized enterprises (SMEs) are still struggling to recognize the potential of this emerging sector and devise their own strategies and concepts. In a quantitative company survey conducted in 2021, Fraunhofer IAO investigated the extent to which smart services are already being used in German companies and the challenges and opportunities arising from this use.

Recently, the term »smart services« has been used across all industries in Germany. It can be found in many service-providing areas and there are numerous examples of its application. Although the term »smart service« is now widely used, there is no clear definition. In the narrow sense, this means digital services that create additional added value for customers by collecting, processing, and analyzing (user or machine) data and use digital platforms to do so (see also acatech 2015). The use of the adjective »smart« is intended to express the fact that these services are highly customizable - i.e., they consider the needs, situation, and context of their respective users. An example of such classic smart services would be the control of home technology via app.

In a broader sense, the term »smart services« is used synonymously for modern services that are digitally supported. The supporting digital elements can be manifold - these include the processing of data on a large scale mentioned earlier and the use of platforms (e.g. cloud platforms). But the use of new digital technologies in connection with services is also often referred to as smart service. Examples include the integration of service robots in elderly care or the use of artificial intelligence in customer communication (e.g. chatbots).

An essential basic requirement for the provision of smart services is the storage, analysis, evaluation, and combination of data (Grohmann et al., 2017). Due to the significant increase in storage and computing capacities in recent years and decades, this basic requirement is increasingly being met. This is now also reflected in the corporate world. The proportion of companies that do not yet provide any data-based services at all has already declined significantly over the course of the last few years (Leiting & Rix, 2019).

Methodology

A survey of German manufacturing companies and service providers was conducted in spring of 2021. All in all, 150 companies were involved, 33 percent from manufacturing industry and 67 percent from the services sector. Of that total, 58 percent were SMEs and 42 percent large enterprises. Using this data, it was possible to compare the proliferation of smart services within the industrial and service sectors and within companies of different sizes.

Another interesting aspect is whether there are differences between successful and less successful companies. To identify the successful companies among those responding, a question was asked about the development of key corporate indicators (number of employees, sales, and profit). Here, it was ascertained how the companies had developed over the last three years in comparison to their own industry. A cluster analysis was used to identify a group of companies with largely positive key performance indicators and a group of

companies with rather negative key performance indicators. In this way, the companies could be divided into successful and less successful companies.

Results

The results show that a specific application of a smart service is already in use at one in five companies. Less than five percent of companies reported no engagement with this topic whatsoever. In general, companies are looking to smart services to generate new markets, boost revenue, increase their competitiveness and, above all, help them tailor their services more closely to customers' needs. To date, however, this has largely failed to materialize on account of various factors, the most important of which are a lack of human resources, a lack of suitable strategies and concepts, an apprehension about the amount of effort required overall for the introduction of smart services, and unresolved questions regarding data protection and data security.

Small and medium-sized companies lag far behind large enterprises in their experience with smart services. 20 percent of the small and medium-sized companies surveyed said they were about to introduce smart services or already had an application in use. The figure for large companies is already 54 percent. Similarly, 8 percent of small and medium-sized companies - but only 2 percent of large companies - say they do not intend to engage with smart services. Looking at the business sectors, there are only slight differences between the secondary and tertiary sectors. The results tend to show that companies from the secondary sector already offer smart services more frequently.

Successful companies are more likely to report that they already have at least one smart services application in use (26 percent versus 17 percent of less successful companies). However, the study does not indicate whether successful companies are more likely to have the resources and risk tolerance to invest in new applications or, conversely, whether companies that are willing to invest in emerging issues such as smart services are ultimately more successful as a result.

It is also of interest to what extent essential competencies for the development of smart services are available in the companies. The competencies surveyed were based on key development steps from idea generation to conception and market launch. The companies surveyed see their own greatest competencies in relation to the development of smart services in the idea development phase (mean value of 3.7 points on a scale of 5). The companies also consider themselves to be relatively well positioned in the "Creating concepts" (mean value of 3.5) and "Developing strategy" (mean value of 3.4) phases.

The successful companies consistently achieve slightly higher mean values compared with the less successful companies. They rate their competencies for developing smart services somewhat better. The same applies to companies from the tertiary sector. Perhaps this better assessment by the service companies is due to the fact that they can transfer their experience from the development of classic services to smart services. About company size, there are no clear differences in the assessment of competencies for developing smart services.

A further question is whether companies need support with digitization. A look at the results shows that many topics receive comparably high scores. At 55 percent each, the digitization of processes, the optimization of services through digitization and the development of new digital services are at the top of the list. These are closely followed by the development of new digital business models and the acquisition of new customers with digital services (53 percent each), as well as increasing the digitization skills of employees (52 percent).

Overall, the companies surveyed have a very high need for support. The large number of topics mentioned in parallel - an average of 3.6 topics per company surveyed - also makes it clear that the companies have diverse expectations of digitization but cannot master the associated challenges on their own. It is interesting to note here that the successful companies identify almost as much need for support as the less successful companies.

Overall, smart services and digitization in general is a topic that has arrived in companies and its potential is recognized. Nevertheless, there are still unanswered questions, obstacles, and a lack of competencies in the

companies to respond appropriately. It is up to the companies to develop strategies for the digitization of services and to build up the corresponding competencies. At the same time, science should provide support here by developing new instruments for transferring R&D results into practice that are more precisely tailored to the needs of companies and that support small and medium-sized enterprises.

Acknowledgement

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