

»» Digitalisation in German SMEs: state of implementation and investment

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A good one in four small and medium-sized enterprises have expanded their digitalisation in the past three years. At 26 %, the share of SMEs with completed digitalisation projects is similar to the proportion of SMEs that innovate.

The share of enterprises that have completed digitalisation projects in the past three years and the level of investment in digitalisation both correlate strongly with the size of the enterprise. Enterprises providing knowledge-based services and R&D-intensive manufacturers are particularly likely to carry out digitalisation projects. Manufacturing enterprises invest the most in their digitalisation processes. SMEs invested just under EUR 14 billion overall in this field in 2016.

Given the high importance of digitalisation for growth, productivity and competitiveness, it appears to make sense to further speed up the pace. A number of barriers need to be tackled to make this possible. They include a lack of IT skills in enterprises, unresolved issues of data security and data protection, problems in modifying the corporate structure and workflow management and insufficient internet speed and stability. What is also necessary is to make reluctant enterprises aware of the opportunities and benefits of advancing digitalisation and supporting companies in financing digitalisation projects.

The digitalisation of the economy and society is a focus of public interest. Since the 2013 Hanover Trade Fair, the German public has generally become familiar with expressions associated with it, such as 'Industry 4.0' and subsequently 'Economy 4.0' or 'Mittelstand 4.0'.

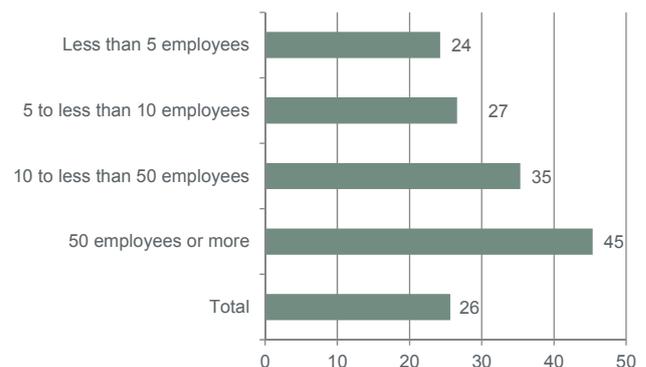
Basically, the penetration of the economy with information technologies (IT) is not entirely new. Since the invention of the transistor (1948) and the introduction of industrial robots (1970s), followed by the personal computer (1980s) and the New Economy boom (second half of the 1990s), progress in IT has always led to waves of major changes in the economy. Now, it is hoped that the phase known as 'digitalisation' will give broad impetus to aggregate economic growth and productivity and to secure competitiveness.¹

The KfW SME Panel surveyed digitalisation aspects for the first time in the current wave. It provides the first representative database for the entire breadth of the German SME sector – including SMEs with less than five employees and the construction industry.

We define digitalisation as the implementation of projects that involve introducing or improving the use of digital technologies in an enterprise's processes, products and services and in its contact with customers and suppliers. Digitalisation includes measures aimed at building corresponding skills within the enterprise and implementing new digital marketing and sales strategies.

Figure 1: SMEs with completed digitalisation projects 2014–2016

In per cent



Source: KfW SME Panel 2017, own calculations

One in four SMEs implement digitalisation projects successfully

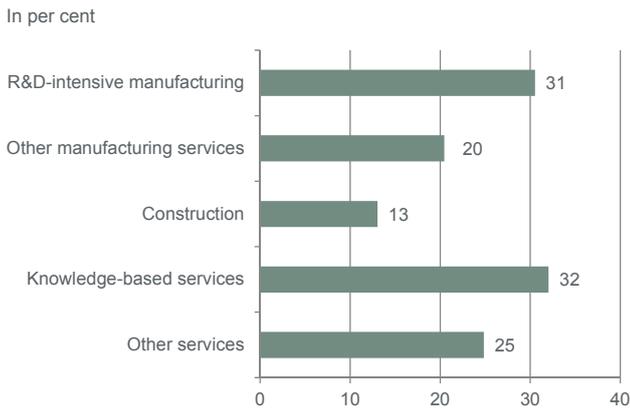
The share of SMEs that have concluded digitalisation projects successfully in the past three years is 26 %, significantly lower than previously expected (Figure 1).² This is presumably due to the fact that the KfW SME Panel also surveys small businesses (with less than five employees) and covers a larger number of sectors – particularly those in which digitalisation currently plays a minor role. Another probable factor is that the KfW SME Panel asks about 'completed projects' and not about the 'implementation' of (= ongoing or completed) digitalisation projects.

The share of SMEs with completed digitalisation projects correlates strongly with the size of the enterprise.³ In small enterprises with less than five employees it is 24 %. In large SMEs with 50 and more employees it is 45 %.

A sector comparison, in turn, shows that enterprises providing 'knowledge-based services' take the lead with a share of 32 % (Figure 2). These include, for example, media services, IT and information services, law firms, tax consultancies and management consulting firms. R&D-intensive manufacturing (e.g. mechanical engineering,

electrical engineering and chemistry) lies just behind, with 31 % of enterprises having completed digitalisation projects. R&D-intensive manufacturers, in particular, are also likely to generate product and process innovations. Construction typically has the lowest digitalisation potential. This sector often regards building information modelling (BIM) as a key step towards digitalisation. The debate over the extent to which such a tool can also be useful for small and medium-sized enterprises is, however, not yet over.

Figure 2: SMEs with completed digitalisation projects 2014–2016 by sector

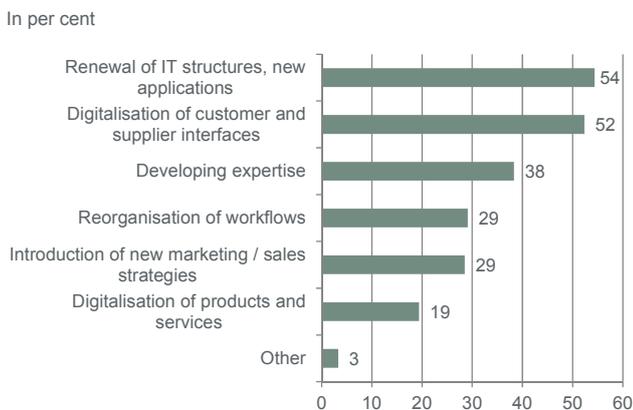


Source: KfW SME Panel 2017, own calculations

Renewal of IT structures predominates

When asked to name specific types of digitalisation projects, SMEs most frequently (54 %) refer to the renewal of their IT structures – that is, the installation of new hardware, the implementation of new systems or of specific, new software applications (Figure 3). The modernisation of processes in a broad sense is thus the most common object of digitalisation efforts. This underscores the fact that the current focus of digitalisation is on improving efficiencies.

Figure 3: Types of digitalisation projects 2014–2016



Source: KfW SME Panel 2017, own calculations

The digitalisation of customer and supplier interfaces follows close behind at 52 %, just after the renewal of IT structures. Often this will involve redesigning websites and deploying internet applications, such as online purchase and payment systems, online advertising, the use of social media or enabling online customer feedback. Sophisticated projects,

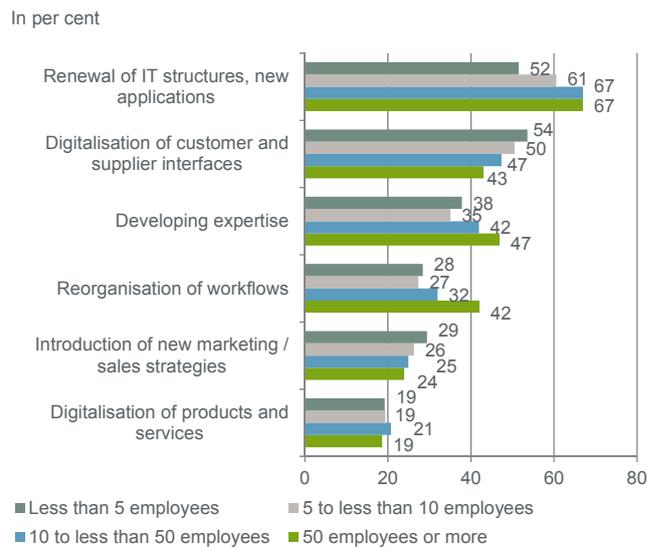
such as automated data exchange within the value chain (for managing the order processing status or reordering inputs, for example), are probably less common for the groups of enterprises mentioning this aspect (see below).

The third most common projects, although with some margin behind the first two (38 %), are those that aim to develop digitalisation expertise. They include contracting IT advisory services or training company employees. Measures aimed at developing expertise are often necessary because digitalisation imposes new demands on employee and management skills – particularly in an advanced stage.

They are followed by the reorganisation of workflows and the introduction of new (digital) marketing and sales strategies, at around 29 % each. The reorganisation of workflows is likely required primarily when digitalisation penetrates deeply into the existing organisation of the enterprise. This indicates that the affected enterprises are putting complex digitalisation measures in place. By contrast, the introduction of new and digital marketing and sales strategies may also be related to the digitalisation of the customer interface already described. This is rather more of an indication that digital latecomers are implementing these projects as well.

The digitalisation of products and services is mentioned least often (19 %). This means digitalisation has the least impact on SMEs’ product range. This is consistent with the frequently voiced complaint that digitalisation in Germany focuses too much on efficiency gains and too little on the search for new fields of activity, such as the creation of new business models.

Figure 4: Types of digitalisation projects 2014–2016 by size of enterprise



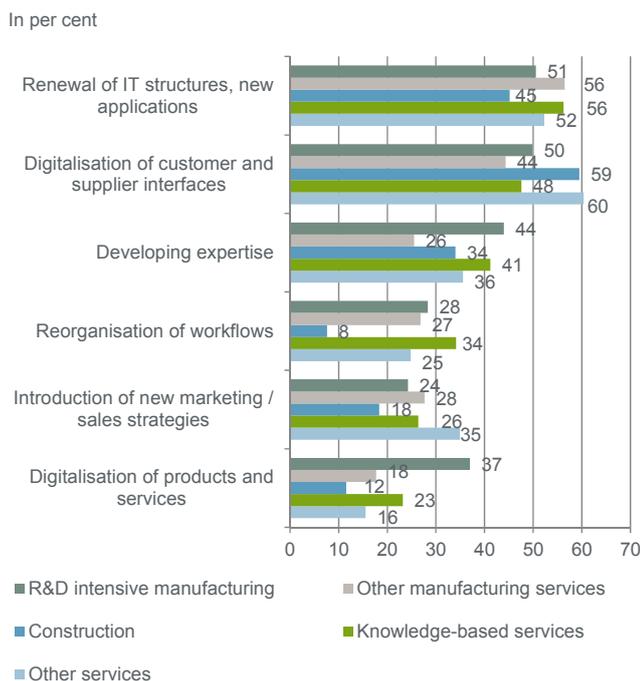
Source: KfW SME Panel 2017, own calculations

Large SMEs are often pioneers of digitalisation projects

The analysis of project types by size of enterprise and sector shows that the larger the enterprise, the more often it renews its IT structures (Figure 4). This is likely to be due, among other things, to the fact that large enterprises also possess the widest variety of IT structures because of their broad range of activities, which also makes upgrades necessary more often. But it also bears noting that large enterprises are often among the digitalisation pioneers because they more often realise complex projects that alter the existing organisation of the enterprise, for example, which requires it to develop specific expertise (see below). The pioneer role, too, is therefore likely to be another reason that large SMEs often implement digitalisation projects.

When this aspect was surveyed, few differences between enterprises of different sectors emerged (Figure 5). What is most notable is that construction firms renew their hardware and software ('IT structures') significantly less often (45%) than SMEs in other sectors. This is probably mostly due to the fact that IT plays a minor role in the provision of construction services.

Figure 5: Types of digitalisation projects 2014–2016 by sector



Source: KfW SME Panel 2017, own calculations

The digitalisation of customer and supplier interfaces and the introduction of new marketing and sales strategies are measures most often adopted by small enterprises. This is also true for enterprises providing 'other services' (e.g. hospitality, transport and storage) and for construction firms – with respect to the digitalisation of customer and supplier interfaces. This indicates that the vast majority of these enterprises are latecomers that are now starting work which large enterprises and more digitalised enterprises and sectors have already completed.

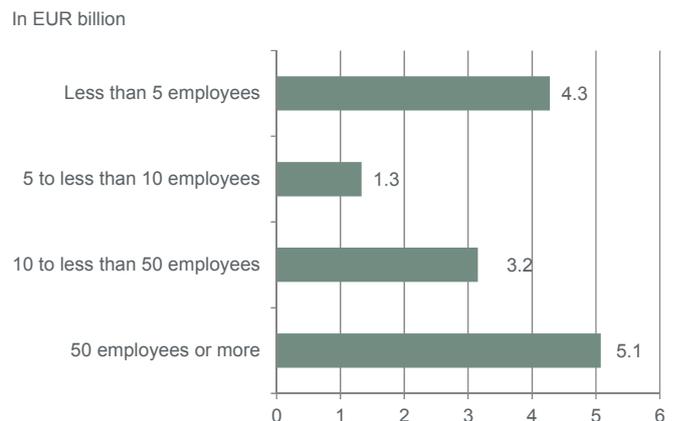
By contrast, the larger the enterprise, the more likely it will carry out projects aimed at developing digitalisation skills and reorganising workflows. In addition, these two types of projects are most often on the agenda of R&D-intensive manufacturers and knowledge-based service providers. Both suggest that these sophisticated digitalisation measures are adopted by enterprises that are more active in digitalising their business.

Enterprise size has only little impact on the level of digitalisation of products and services. Here as well, a sector comparison shows that such projects are most common among R&D-intensive manufacturers and knowledge-based service providers.

SMEs spent EUR 14 billion on digitalisation

SMEs with completed digitalisation projects spent a total of EUR 13.9 billion on digitalisation projects in 2016 (Figure 6). When compared with the EUR 32.2 billion the SME sector invested in innovation, this is a considerable amount. But it pales in comparison with the EUR 169 billion invested⁴ in machinery, buildings, equipment and similar items.

Figure 6: Aggregate SME expenditure on digitalisation by company size in 2016



Note: Values extrapolated from the number of employees.

Source: KfW SME Panel 2017, own calculations

Enterprises with less than five employees account for a high proportion of total digitalisation expenditure in the SME sector, at EUR 4.3 billion (31%). This is true despite the relatively low share of enterprises with digitalisation projects in this size class. This finding can be attributed to the high share of these enterprises in the total number of small and medium-sized enterprises, as businesses with less than five employees represent 81% of the SME sector.⁵

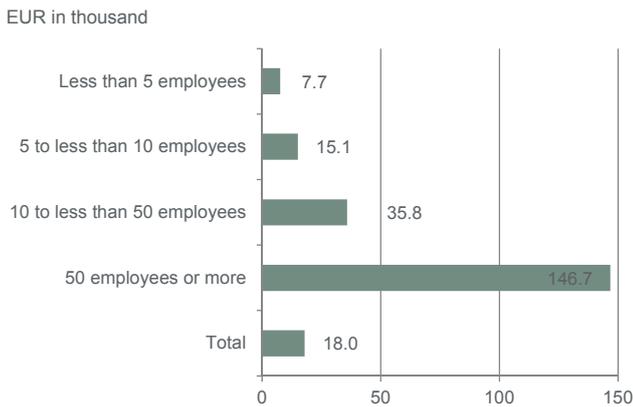
Expenditure on digitalisation is heavily dependent on enterprise size

Finally, figures 7 and 8 show the average amounts invested in digitalisation by enterprises with digitalisation projects. SMEs spent an average EUR 18,000 on digitalising their business in 2016. The level of expenditure depends strongly on the size of the company. On average, small enterprises with less than five employees spend just under EUR 8,000

on digitalisation. Enterprises with 50 or more employees invest nearly EUR 150,000, over 19 times more. It is important to keep in mind that because of their size, small enterprises generally require less hardware and software than large enterprises. As a result, they only need to invest low amounts in advancing their digitalisation. The size of the gap in expenditure on digitalisation, however, gives reason to fear that a rift will form here in the foreseeable future that will divide the SME sector into heavily digitalised, large enterprises and small enterprises that are lagging behind.

A breakdown of expenditure on digitalisation by sectors shows that manufacturing is in the lead. This is particularly true of R&D-intensive manufacturing, where enterprises invest an average EUR 75,000 in digitalisation. Other manufacturing enterprises invest EUR 36,000 in digitalisation, which is also far above the average. As was to be expected, expenditure on digitalisation in the construction industry is lowest, averaging a good EUR 8,000.

Figure 7: Average expenditure on digitalisation by enterprise size in 2016



Note: Only enterprises that spend on digitalisation.

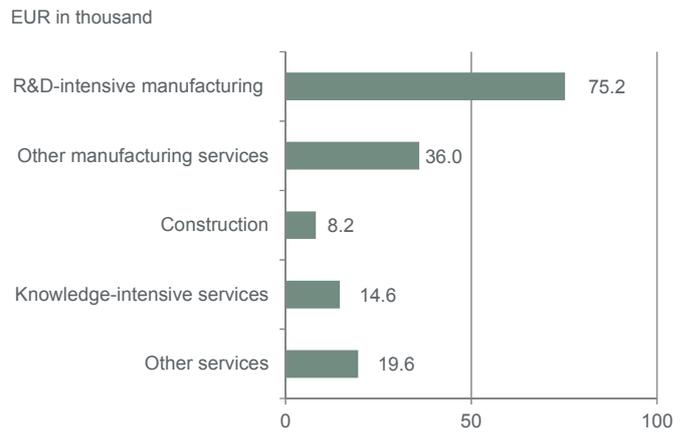
Source: KfW SME Panel 2017, own calculations

Conclusion

The analysis of digitalisation activities across the SME sector shows that, with a share of 26 %, fewer SMEs are expanding the digitalisation of their business than previously assumed. Small enterprises and construction enterprises are least likely to implement digitalisation projects and spend comparatively small amounts on digitalisation. The highest shares of enterprises with completed digitalisation projects are found among the large SMEs, as well as in knowledge-based services and in R&D-intensive manufacturing.

Large SMEs and manufacturers also spend the highest amounts on digitalisation per capita and – in a similar way as knowledge-based service providers – carry out the most ambitious digitalisation projects. A comparison between digitalisation expenditure (EUR 13.9 billion) and expenditure on innovation reveals that digitalisation plays a significant role in innovation efforts in the SME sector.

Figure 8: Average expenditure on digitalisation by sector in 2016



Note: Only enterprises that spend on digitalisation.

Source: KfW SME Panel 2017, own calculations

Because digitalisation is acknowledged as a significant driver of growth, productivity and competitiveness, it nevertheless appears necessary to continue pushing ahead with digitalisation in Germany’s SME sector. But businesses are facing a variety of barriers. These include a lack of IT skills, unresolved issues relating to data security and data protection, problems in adapting their corporate structure and workflow management and the unsatisfactory quality of their internet connection⁶. Enterprises requesting loans for digitalisation projects also report greater difficulty accessing credit.⁷ This is not really surprising given the similar characteristics of digitalisation and innovation projects.

However, many enterprises are not aware of the benefits of (further) digitalisation. In addition to measures aimed at tackling the above barriers to digitalisation, an important starting point is to raise awareness about the opportunities and advantages provided by digitalisation. Not least, measures that accompany the support of R&D while providing financial support for digitalisation projects could be helpful as well. ■

¹ Cf. BMWi (Ed.) (2016): Digitale Strategie 2015 (in German).

² Cf. Saam, M., Viète, S. and Schiel, S. (2016): Digitalisierung im Mittelstand: Status Quo, aktuelle Entwicklungen und Herausforderungen ('Digitalisation in SMEs: status quo, current trends and challenges' – our title translation, in German) Research project on behalf of KfW Group and DIHK (Ed.) (2015): Wirtschaft 4.0: Große Chancen, viel zu tun. Das IHK-Unternehmensbarometer zur Digitalisierung.

³ Allocation to size classes is by full-time equivalent employees. This is done by adding together the number of full-time employees and active owner-managers. In addition, two part-time employees are counted as one full-time employee. Trainees and apprentices are not included in the count.

⁴ Cf. Schwartz, M. (2017): KfW SME Panel 2017: Germany’s domestic economy continues to break records– sectoral transformation poses new challenges, KfW Research.

⁵ Cf. Schwartz, M. (2017): KfW SME Panel 2017: Germany's domestic economy continues to break records– sectoral transformation poses new challenges, KfW Research.

⁶ Cf. Zimmermann, V. (2017): Business Survey 2017. Digital transformation of industries: broad basis, multiple barriers, KfW Research or Saam, M., Viete, S. and Schiel, S. (2016): Digitalisierung im Mittelstand: Status Quo, aktuelle Entwicklungen und Herausforderungen (*'Digitalisation in SMEs: status quo, current trends and challenges'* – our title translation, in German) Research project on behalf of KfW Group.

⁷ Cf. Zimmermann, V. (2016): Access to credit varies considerably depending on the purpose, Focus on Economics No. 148, KfW Research.