

»» Coronavirus crisis is hampering innovation, digitalisation sees mixed trend

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The beginning of the coronavirus crisis saw a push towards digitalisation as well as innovation. However, the trend has partly reversed during the course of the crisis. It is now evident that innovation in the SME sector is declining, with 25% of SMEs reporting that they have scaled back innovation activities. Only 10% of businesses expanded them. Digitalisation is (still) showing positive momentum due to the coronavirus crisis, as 23% of companies have expanded their activities and 14% have cut back.

Large SMEs and those that conduct R&D in particular have increased or at least continued both activities. Small businesses and those without R&D are more likely to reduce or continue to have no such activities.

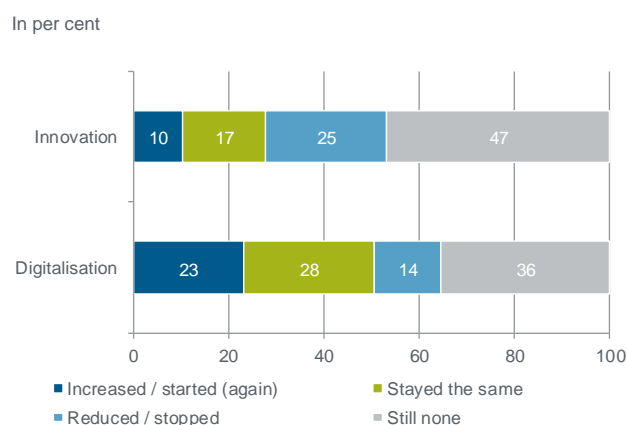
What is noteworthy is that businesses that suffered losses in turnover have reduced their innovation and digitalisation activities, with shares of 36 and 19%, respectively. This raises fears that the majority of companies will also reduce their digitalisation activities in the further course of the crisis. That is because the tense financial situation is making it hard for businesses to finance such activities.

It must be feared that the push towards digitalisation and the high proportion of innovators limited themselves at the start of the crisis to fast-tracked measures that had an immediate effect on the income situation. But as the crisis dragged on, extensive and longer-term projects with a more strategic orientation were either spread over a longer period or abandoned entirely.

Digitalisation and innovation activities are major future investments for businesses. How these specific investments will develop in economically challenging times is hard to predict. Particularly in crisis situations, there is a need to tread new paths in order to address new customer groups and become more efficient as a way to make up for turnover losses. On the other hand, these future investments pose greater challenges for enterprises, especially in times of crisis. Funds for financing such activities are scarce and other payment obligations must be honoured first. Not least, external funds are typically more difficult to obtain in such phases.¹ In the following we therefore examine how SMEs' innovation and digitalisation activities developed in Germany over the first six months or so of the coronavirus pandemic. The present analysis thus focuses mainly on the extent of innovation and digitalisation activity and less on the question of whether businesses have completed innovation or digitalisation projects.

At the beginning of the coronavirus pandemic, there was indeed evidence of a push towards digitalisation and innovation. Within a short period of time, more SMEs brought forth innovations than over a typical three-year period.² With respect to digitalisation, for example, it was found that home working capacities³ were quickly expanded and online transactions⁴ sharply increased. But how did innovation and digitalisation activities evolve in the further course of the crisis? In order to examine this, KfW Research conducted a supplementary survey under the KfW SME Panel in early September (see box 'Supplementary coronavirus survey under the KfW SME Panel' at the end).

Figure 1: Development of innovation and digitalisation activities in the course of the coronavirus crisis



Source: KfW SME Panel 2020, 3rd supplementary survey, own calculations.

Innovation activity is down under the coronavirus, digitalisation shows a mixed trend

Around half a year into the coronavirus pandemic, the majority of small and medium-sized enterprises reported a decrease in innovation. While 10% increased their activities under the coronavirus, 25% of SMEs reduced them (Figure 1).

A mere 17% of businesses maintained the level of innovation activity they had before the crisis. The findings were slightly more positive for digitalisation. Indeed, nearly three in ten SMEs continued the digitalisation activities from before the crisis. While 23% of enterprises increased their activities, 14% reduced them. Well over one third of SMEs are still not going digital.

The situation is thus somewhat more positive for digitalisation than for innovation. One likely reason is that digitalisation was generally on a positive trend in the past years and

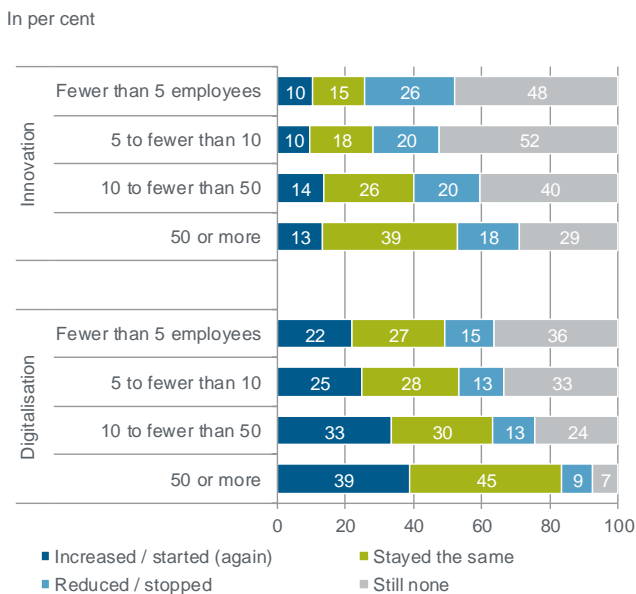
Germany⁵ has had a need to catch up in this area. Another reason is that lockdowns, contact restrictions and the risk of contagion at the workplace in particular have encouraged businesses to step up their digitalisation efforts. So there is also reason to assume that businesses have shifted some of their efforts around traditional innovation towards digitalisation measures.

Stark differences between small businesses and large SMEs

Innovation and digitalisation activities have developed very differently between large and small businesses. The shares of companies that continued or even increased their activities grew with company size, while the shares of enterprises with decreasing or no innovation and digitalisation activities fell (Figure 2).

This trend is particularly pronounced in digitalisation. The share of businesses that expanded their digitalisation activities during the pandemic grew by a good three quarters from the smallest to the largest enterprise size class. By contrast, the proportion of enterprises with declining activities dropped by around two tenths. The balance between the enterprises that increased and decreased their digitalisation efforts rose from 7 points in the smallest to 30 points in the largest size class. The balances for innovations are negative in all size classes.

Figure 2: Development of innovation and digitalisation activities in the course of the coronavirus crisis by enterprise size



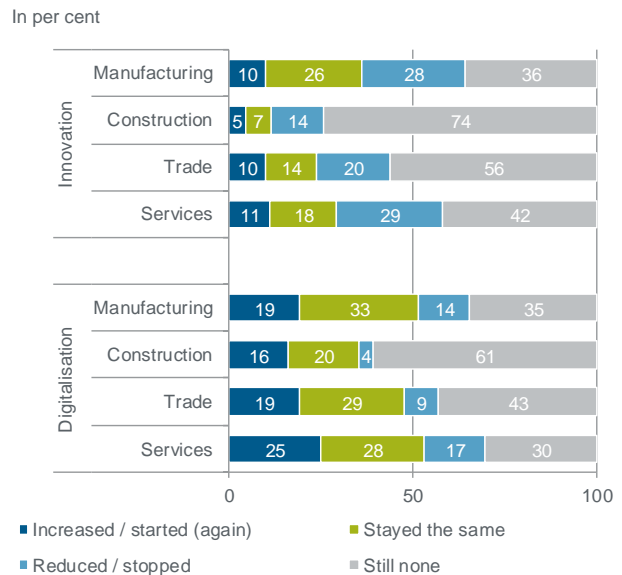
Source: KfW SME Panel 2020, 3rd supplementary survey, own calculations.

One possible reason for the more negative development in small businesses compared with large enterprises is that small businesses are affected by the impacts of the crisis more often and more severely than larger ones.⁶ Another likely factor is that large enterprises have made their innovation processes more constant than small businesses. This includes having ongoing own R&D activities⁷, for example, and an own digitalisation strategy.

Pioneering sectors often continue innovation and digitalisation activities

The analysis by economic sector illustrates that, with the manufacturing and services sectors, the enterprises that were also among the pioneers in recent years were most likely to have continued their digitalisation and innovation activities.⁸ The economic sectors that are more severely affected by the coronavirus crisis are shown to be mostly scaling back innovation as well as digitalisation activities. If we look at the balance (the proportion of businesses expanding their activities less the ones reducing them), the same applies to manufacturing and services in particular (Figure 3). In the construction sector, which has been relatively little impacted, on the other hand, the previous innovation and digitalisation trend continued on a low level with relatively little change.

Figure 3: Development of innovation and digitalisation activities in the course of the coronavirus crisis by economic sector



Source: KfW SME Panel 2020, 3rd supplementary survey, own calculations.

SMEs that conducted own research and development (R&D) in the past have also been more active during the crisis

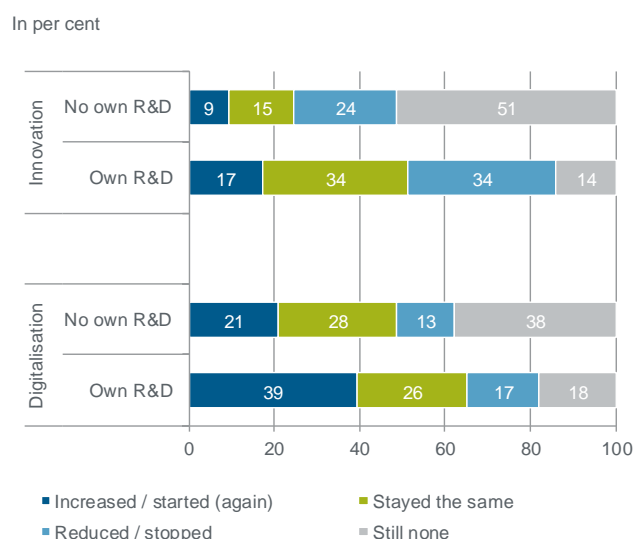
With a share of 34%, companies engaged in R&D are more than twice as likely to continue innovating as those that have no R&D activities (Figure 4). However, these businesses are also more likely than others to realign their innovation efforts. On balance, the realignment of innovation activities is on a similar level in companies with and without own R&D activities.

With regard to digitalisation, on the other hand, there is very little difference between both groups in the proportion of businesses that have maintained their level of activities. By contrast, companies with R&D are expanding their digitalisation activities more than those without R&D in the coronavirus crisis. The balance (the share of businesses that have grown their activities minus those that have reduced them) is therefore a clearly positive 22 points for companies with R&D

but only 8 points for SMEs without R&D.

This finding underscores the fact that businesses that have constant processes in place for the development and introduction of innovations (expressed in the conducting of own R&D) are more likely to continue or even grow such activities than other enterprises, even in a crisis situation. The effort involved in developing innovations even during the crisis is more pronounced in these enterprises than in those without R&D. That strengthens the resilience of these companies in acute crises and, after the crisis has passed, helps leave the negative effects behind early with new products, more efficient processes and improved business models.

Figure 4: Development of innovation and digitalisation activities in the course of the coronavirus crisis by past R&D activity



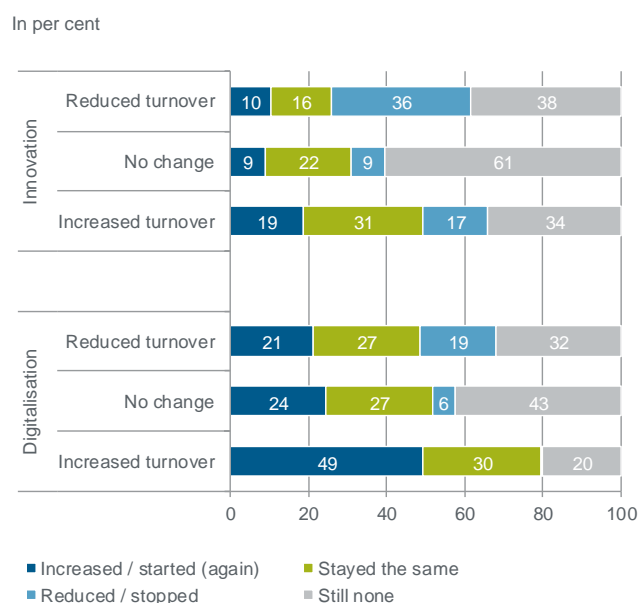
Source: KfW SME Panel 2020, 3rd supplementary survey, own calculations

Enterprises adversely impacted by the crisis have reduced their digitalisation and innovation activities

Finally, the analysis of innovation and digitalisation activities by turnover development last year shows that SMEs which were little affected by the crisis or even expect to have generated higher turnover last year were more likely to continue their activities than businesses that had to contend with turnover losses. On balance, businesses with a more favourable turnover development were also more likely to expand than to scale back their innovation and digitalisation activities.

Thus, the balance of small and medium-sized enterprises that have suffered turnover losses and stepped up their innovation activities minus those that have reduced them is -26 points. The corresponding balance among SMEs that have not experienced any major changes in turnover, on the other hand, is 0 points. With regard to digitalisation activities, the respective balances are 2 and 18 points. In the (albeit small) group of companies that expect their turnover to grow during the coronavirus pandemic, both balances are even higher. Thus, the extent of digitalisation and innovation activity clearly correlates positively with the development of turnover.⁹

Figure 5: Development of innovation and digitalisation activities in the course of the coronavirus crisis by turnover performance expected for 2020



Source: KfW SME Panel 2020, 3rd supplementary survey, own calculations

Conclusion

The analysis of the development of innovation and digitalisation activity approximately six months into the coronavirus pandemic in Germany shows that the majority of small and medium-sized enterprises have scaled back their innovation activities, while digitalisation on balance (still) exhibits positive momentum. This opposing trend is probably due primarily to the fact that although the coronavirus pandemic generally hampers the financing of corresponding activities, lockdowns, contact restrictions and risk of contagion have made it imperative above all for businesses to implement digitalisation measures – such as expanding home working capacities or online sales methods – in order to continue operating.

Large SMEs and those that are engaged in R&D in particular have continued or increased their innovation and digitalisation efforts, while smaller businesses and those without R&D have been more likely to scale back or continue operating without such activities. The coronavirus crisis has thus even accentuated the existing divide between both groups.

With respect to the impact of the coronavirus crisis, it is also evident that businesses that have suffered losses in turnover have been least likely to continue and more likely to scale back their innovation and digitalisation activities. The current crisis situation is thus mostly having an adverse impact on innovation and digitalisation activity. This adverse impact on innovation activity already became clear six months into the crisis. In the field of digitalisation it can be assumed that the initial push still predominates only in the current broad analysis. Here as well, there is reason to fear that the longer the crisis drags on, the more the enterprises' precarious financial situation will force them to make further cuts to digitalisation activities.

Furthermore, the comparison with the high shares of enterprises that introduced innovations or adopted digitalisation measures at the beginning of the crisis highlights the fact that¹⁰ these were usually measures that could be implemented quickly and with little effort and expenditure and were presumably intended to safeguard the companies' immediate survival during the coronavirus crisis. More strategically oriented, longer-term projects that were not expected to have immediate positive effects on the earnings situation, on the other hand, were probably often deferred. This is likely to have been the main reason for the observed decline in innovation activities.¹¹

The coronavirus pandemic can therefore be expected to weigh on SMEs' future investment overall. This applies to the immediate period during the acute crisis. However, weaker investment must also be expected in the aftermath of the crisis, since businesses will be facing an increasingly difficult choice between investing in greater crisis resilience on the one hand and investing in higher competitiveness on the other hand.¹² Economic policymakers are called upon to offer a suitable range of promotional measures to ensure that businesses can pursue both targets in a balanced way.

Supplementary coronavirus survey to the KfW SME Panel

The current analysis is based on a supplementary online survey conducted as part of the KfW SME Panel from 1 to 14 September 2020 to identify the current impacts of the coronavirus crisis. All enterprises that participate in the KfW SME Panel and had provided a valid email address were surveyed. As the supplementary survey was linked to the main database of the KfW SME Panel,¹³ the survey results can be extrapolated to the total population of SMEs.

The question about the development of innovation and digitalisation activities was raised as follows:

Does the coronavirus crisis have any effects on your innovation activities [digitalisation activities]? Respondents could choose from the following replies:

- Our innovation [digitalisation] activities were terminated completely
- Our innovation [digitalisation] activities were scaled back compared with the pre-coronavirus situation
- Our innovation [digitalisation] activities continued nearly unchanged from the pre-coronavirus situation
- Our innovation [digitalisation] activities were increased compared with the pre-coronavirus situation
- Our innovation [digitalisation] activities were restarted in the course of the pre-coronavirus situation after we conducted no innovation prior to the coronavirus crisis

For the analysis, the possible responses 'terminated completely' and 'scaled back' as well as 'restarted' and 'increased' were combined for the sake of clarity.

¹ Cf. Schoenwald, S. (2020), **KfW ifo Credit Constraint Indicator: October 2020: Small and medium-sized enterprises face growing barriers in accessing credit**, KfW Research, and European Central Bank (2020): Survey on the Access to Finance of Enterprises in the euro area - April to September 2020.

² Cf. Zimmermann, V. (2020): **Innovation during the coronavirus crisis: necessity is the mother of invention**, Focus on Economics No. 295, KfW Research.

³ Cf. Abel-Koch, J. (2020): **Coronavirus crisis drives shift to flexible and digital working in SMEs**, Economics in Brief No. 197, KfW Research and Demmelhuber, K., Englmaier, F.; Leiss, F.; Möhrle, S.; Peichl, A. and Schröter, T. (2020): Homeoffice vor und nach Corona: Auswirkungen und Geschlechterbetroffenheit (*Home working before and after coronavirus: impacts and gender effect* – our title translation, in German only), ifo Schnelldienst digital 14/2020.

⁴ Cf. Federal Statistical Office, press release No. 161 dated 8 May 2020.

⁵ Cf. EU Commission (2020): The Digital Economy and Society Index 2020. Last retrieved on 2 December 2020.

⁶ Cf. Schwartz, M., and Gerstenberger, J., (2020), **Coronavirus crisis in Germany's SMEs: Return to full economic activity still far off, but gradual opening has eased pressure on liquidity**, Focus on Economics No. 294, KfW Research.

⁷ Cf. Zimmermann, V. (2017): **KfW Innovation Report 2016. Innovation is concentrated in increasingly fewer enterprises**. KfW Research.

⁸ Cf. Zimmermann, V. (2020), **KfW SME Digitalisation Report 2019. Digitalisation projects are gaining traction in the SME sector but digitalisation expenditure has remained low for years**, KfW Research and Zimmermann, V. (2020), Which SMEs use digital platforms? Focus on Economics No. 303, KfW Research.

⁹ This is consistent with the observation that SMEs primarily fund both innovation and digitalisation activities from internal sources. Cf. Zimmermann, V. (2020), **How SMEs fund their innovation and investment expenditure – a comparison**, Focus on Economics No. 280, KfW Research and Zimmermann, V. (2019), **How SMEs fund their innovation and investment expenditure – a comparison**, Focus on Economics No. 237, KfW Research.

¹⁰ Cf. Zimmermann, V. (2020): **Innovation during the coronavirus crisis: necessity is the mother of invention**, Focus on Economics No. 295, KfW Research and Zimmermann, V. (2020): **SMEs are responding creatively to the coronavirus crisis**, Focus on Economics No. 291, KfW Research.

¹¹ Cf. BMWi (2020): Transferinitiative Mehr Ideen – mehr Erfolge (*Transfer initiative More Ideas – More Successes* – our title translation, in German only). Results of an online survey – How is the coronavirus impacting on research and innovation in innovative enterprises? https://www.bmwi.de/Redaktion/DE/Downloads/E/ergebnisse-online-befragung-corona-forschung-innovation.pdf?__blob=publicationFile&v=12, last retrieved on 25 June 2020.

¹² Cf. Schwartz, M., Borger, K., Brüggemann, A., Gerstenberger, J., Köhler-Geib, F. and Zimmermann, V. (2020): **SMEs between financial resilience and a digital and green investment surge – a trade-off that should not be**, Focus on Economics No. 306, KfW Research.

¹³ Cf. Schwartz, M., and Gerstenberger, J., (2020): **KfW SME Panel 2020, Coronavirus pandemic has dampened expectations for 2020 – SMEs entered the crisis from a strong position**, KfW Research.