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Does digitalization boost companies‘ new product launch success? An empirical study

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Abstract

Digitalization and new product launch are two important topics which have been proved to have large input on companies’ success. Digitalization, because it can boost productivity, diminishes cost and raises effectiveness. New product launch, because innovation success guarantees high product margins and helps to avoid existence-threatening price competition in commoditized product markets. However, regarding shorter product life cycles, the ability to innovate and launch new products successfully, becomes an evident driver of companies’ success. Can digitalization with its described effects help to raise new product launch success? Are companies who obtain a higher level of digitalization degree, more successful concerning new product launch results? Although this question is a relevant topic to marketing and strategic management, there has not been research on that topic. Thus, research on that subject would close a relevant gap in science. In that sense, the objective of this article is to reveal the link between digitalization and new product launch success.

This question is highly relevant before the background of the fourth industrial revolution, driven by the digitalization of business. Nevertheless, this specific question has never been asked. Also, no construct exists which allows to operationalize and measure the amount of the digitalization degree related to those digitalization measures that are relevant for new product success (= the relevant digitalization degree). This study is a first attempt to open the new field of links between digitalization and new product success. Therefore, the correlation between new product launch success and digitalization degree of German B2B traders has been inspected on the basis of an empirical survey.

Keywords: digitalization, product launch success, innovation success, productivity

JEL codes: M30, L81, L10, O33

1. Introduction

The objective of this article is to reveal links between digitalization and new product launch success. Furthermore, it shall reveal deeper insights into how digitalization influences new product launch success. Therefore, the development of manageable indicators to measure and visualize the part of digitalization, which is relevant for new product launch success, is a further objective of the article.

The relevance of the subject is given by the importance of new product launch. Studies already revealed the importance of innovation for overall companies' success, e.g. Langerak et al 2004, Cho and Pucik, 2005, Langerak and Hultink, 2005. Innovation makes sure that companies can gain competitiveness in a harder environment which is characterized by high price pressure, technologic change and international political conflicts: New products assure higher product margins than older products that are more threatened by competition (Hunt and Duhan, 2002). However, new product projects have a high tendency to fail. More than 50% of the new product launches are not successful (Hauschildt *et al.*, 2016). Innovation is thus a high risk for companies, and know-how to raise innovation success is therefore highly relevant. The last phase of the innovation process is the product launch, which is also the process with the highest cost allocation (Cooper and Kleinschmidt, 1988; O'Dwyer and Ledwith, 2008). It is, as a consequence, the most important phase of the innovation process. Many studies have been conducted to inspect the launch success factors, as the importance of that last innovation step has been widely accepted. Among these success factors, the organizational factors have been identified as key drivers of launch success in many studies (Calantone, Di Benedetto and Song, 2011). Organizational proficiency assures that launch timing is well coordinated; Market research skills assure that the product is matching market needs; Marketing and sales proficiency guarantees good results in promoting the new product and obtaining fast and deep diffusion. These results point out that the performance of internal processes needs to be optimized if product launch shall become successful. Therefore, processes must become more efficient and more effective. Studies showed that the digitalization is a diver of organizational efficiency and effectiveness (Brynjolfsson and McAfee, 2014; Arntz, Gregory and Zierahn, 2016).

The deepness to which digitalization will have an input on company's' processes and will change the business environment, is widely accepted to be overwhelming. Therefore, it can be assumed that digitalization will have a large input of the product launch process as well. To look more into detail concerning this input, is the objective of this study.

2. Literature Review

New product launch

Since 2005, approx. 40 studies have been executed with the topic of product launch. In the 30 years before, again that number of studies exists which serves as a fundament for the younger studies (Kuhn, 2007). Main focus of research has been the success-relevant strategic variables of product launch, the tactic variables of product launch, and the analysis and definition of different categories of product launches. Mainly, structural equation models have been used to identify success clusters and success factors. An early phase of research wanted to clarify the question whether an early launch compared to the competitors (pioneer strategy) or learn from mistakes of the pioneer and thus be second or third company to launch (follower strategy) is better. Results show that the pioneer strategy is better in many cases, but not necessarily (Kuhn, 2007). Especially for small firms it is risky to be pioneer and invest into innovative products (O'Dwyer and Ledwith, 2008; Williams and Van Triest, 2017). Innovative products, that is also a result from many studies, are normally advantageous because the market rewards newness (Kuhn, 2007; Ozer and Tang, 2019). However, for small companies, innovativeness is riskier than for bigger companies because it requires more resources to create a really new and innovative product. From the beginning, research laid a focus on the product itself as success factor. It proofed to be true that a good product sells better than a bad one, as it is easier to convince customers from a good product (Kuhn, 2007; Rijsdijk, Langerak and Hultink, 2011). But the vast majority of studies show that a professional launch execution is the main success driver (Calantone, Di Benedetto and Song, 2011; Lee *et al.*, 2011; Song, Song and di Benedetto, 2011). Professional launch execution is defined as professional execution of marketing measures, logistic measures and coordination of measures within the supply chain. The timing of the launch, understood as the lean and agile coordination of all members within and outside of the company, that participate in a product launch, is one of the most important ingredient of launch success (Calantone and Di Benedetto, 2012). This finding is intuitive, because marketing campaigns only fulfil their target, if products are at stock and so customers can buy them whenever they want. The coordination of measures within the sales channel to effectuate an appropriate timing, is evidently important to obtain a successful product launch (Talay, Seggie and Cavusgil, 2009; Didonet *et al.*, 2014; Kou and Lee, 2015).

The handling of all these presented factors also shows that the professional management of the launch process is a relevant success driver. The link between general management factors and new product performance has been confirmed by several studies (Kuhn, 2007; O'Dwyer and Ledwith, 2008; Calantone, Di Benedetto and Song, 2011; Millson, 2012). Taking into account the presented results, science revealed the strong and relevant aspects that administrational efficiency and proficiency has on new product performance: Administrational proficiency, coordination between different sales channel partners and divisions within the company, and tools that simplify working processes of the R&D process are important factors in that aspect. It is intuitive that digitalization which is supposed to raise productivity and effectiveness of processes, would provide support for these aspects, too.

Digitalization

The impact of digitalization on the economy and also on companies has been discussed with various results. Some studies show that the use of digital tools like ERP and CRM systems, cloud computing, artificial intelligence and the replacement of standardized labour steps by machines, lead to significant productivity gains in firms (Gal *et al.*, 2019). Even though digitalization is commonly linked to expected productivity gains, current results in worldwide economies state a stagnating productivity growth for 2 decades now (van Ark, 2015), concluding that the currently new ICT technologies would need more time to show effects or need the combination with intangible assets and tacit knowledge in order to be successful (van Ark, 2015; Gal *et al.*, 2019). Result of this current research reveals the difficulties of many companies, to use digitalization for an improvement of their productivity. If the implementation of digital measures shall bring profits to companies, they need to invest into know-how, intangible assets and a suitable overall digitalization strategy. This step seems to be critical for lots of companies. However, ICT producers are those that take profit in the first step before other companies take digitalization measures, and report high productivity gains compared to other sectors (van Ark, 2015). It is also within current scientific discussion why the productivity gains seem so small for many sectors except ICT sector. The paradox of increasing investment into new technologies (digitalization measures in this case) and yet stagnating productivity gains is called the Solow-paradox. (Brynjolfsson and McAfee, 2014; Bughin *et al.*, 2018). Within the current discussion, recent studies could observe an increasing productivity gap between companies that succeed in enhancing knowledge and technology allowing them to reach significant productivity gains from digitalization and the use of AI, and other companies who don't. The effect of productivity gains of general digitalization measures left aside, it is undisputed that digitalization leads to standardization especially for routine tasks, thus it will change the working environment for many companies and require a huge amount of organizational change.(Brynjolfsson and McAfee, 2014; Frey and Osborne, 2017; Boes *et al.*, 2018). In detailed view, many studies show the positive effect and the future growing significance of this organizational change linked to digitalization, or digital tools, on company's productivity and performance (Will, Campbell and Holmes, 2015; Diermeier and Goecke, 2017; Eller *et al.*, 2020; Rivares *et al.*, 2020; Salmen, 2020). Their works show that the researched companies report significant productivity gains in their administrational processes because they use digital tools. Online marketing, for instance, can also be used to diminish cost of advertising and reach a wide range of potential customers without the heavy investment which print advertisement would require (Kreutzer, 2016). Out of question, digitalization delivers new tools which enable companies to be more efficient and effective when it comes to product launch measures. In addition to the positive effects that digitalization can have, the threat of being overtaken by competitors who find better ways of using digitalization to raise their competitiveness, is not to be neglected. These competitors might overchallenge other companies, because in future, much more data will have to be handled by companies, than in the past (Abraham, 2014; Battistello, Kristjansdottir and Hvam, 2018). Considering these gaps, it seems clear that the process of digitalization within companies, even though of major importance for the survival and maintaining competitiveness of companies, seems to be difficult to put into

practice. Companies must look for ways to improve their digitalization skills and implement digitalization into their working environment and enhance related know-how. Taking into account as well the chances of digitalization as also the risk of being outperformed by digitalized competitors, some more effort is worthwhile to understand the relation between digitalization degree within a company and new product success which has to be proved to be one of the major business fields to achieve sustainable financial performance.

3. Methods

The objective of this study is to reveal links between the digitalization efforts of a company and new product launch success. Therefore, a survey has been conducted among German ironware traders based on a self-developed questionnaire in order to gather empirical data.

Random sample and questionnaire

The survey has been sent via email to a selection of 2.972 ironware traders in Germany, Austria and Switzerland, that are members of the purchase associations EDE, EIS and NORDWEST. Therefore, a 100% sample has been chosen, as no further information concerning size or positioning of the concerned traders was available when launching the survey. The traders which are members of these associations, are normally specialized in ironware, machinery, industrial materials, office furniture, working security /protection. These businesses are B2B markets. The questionnaire consisted of 26 questions and was designed according to the preference of the trader as an Excel-Sheet or PDF file, beginning with short instructions. The design was easy to work with, in order to assure high response. The constructs of the questionnaire were described by multi-item-indicators. By using the following constructs, links between digitalization and new product success have been inspected:

Conceptual model and hypotheses

The conceptual model is shown in figure 1.

New product performance:

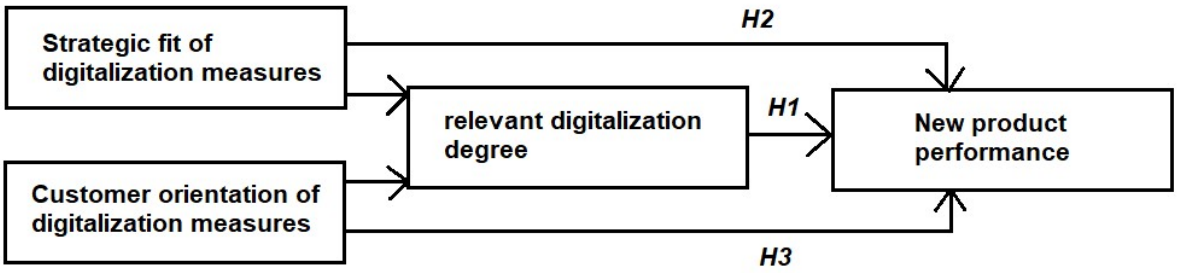

Figure 1: Conceptual model

New product performance has been recognized as one of the key success drivers of companies. New product success in the context of business, mainly focuses on a financial perspective. A product contributes to companies' success and is therefore performing if it brings financial benefits or if it supports other products of the company. That means, new product success is more than just a cash-flow issue between cost and revenues of a new product. Success measurement is an enormous issue, related also to definition and measurement methods. These can only be used in a meaningful and comparable way if they are able to relate the contribution of measures to the achievement of a specific objective. What is the goal of a product launch? When is this successful? Using only one indicator would "probably be an oversimplification for most firms" according to Di Benedetto and Calantone (2007) who use measurement-scales that have been based on previous works by Cooper and Kleinschmidt (1987, 1993). Lee et al (2011), for instance, define new product performance as financial performance (market share, Profitability) and strategic performance (customer satisfaction and market extension).

In general, it has therefore become common practice to integrate various indicators to define new product success. (Kuhn, 2007). More recent studies refer to the success term as "new product performance". Most of the reviewed studies use weighted indicators based on multi-item scales to define success, containing financial success (e.g. product or company profitability – (e.g. Cooper, Edgett, and Kleinschmidt 2004), market success (e.g. product perception, market share, sales numbers) and figures that relate the real numbers to forecasted numbers (e.g. speed, sales estimations – e.g. Kuhn 2007). For the means of this study, new product performance is therefore also seen as a mixture of the financial perspective (profit/loss of a new product), derive measures (comparison between budget/planning and reality, comparison between past product launches and current product launches, and comparison between competitors' launches and own launches) and market performance (turnover, sales, and market share with the new products). Also, a time horizon of the last five years is defined for new product success. For the means of this study, new product performance is defined as the overall success with new products, that companies have launched within the last five years.

Relevant digitalization degree:

The objective of the model is to measure the effect of digitalization measures on the new product launch success. The effect of digitalization could be contradictory: As concluded in the literature review, common consensus attributes productivity gains to digitalization, but also risks. Lots of dispute is about the question, whether digitalization will create more jobs than it destroys, or the other way round. This question is relevant, because if negative effects predominate, this will cause shrinking demand, so the competitive pressure will even become larger on companies. Digitalization, in that case, could have a negative input. In any case, digitalization thus causes adaption pressure. Companies have to change their processes and working contents of people. With new methods, demands and products arising, there will also be effects on the product launch procedure. Companies who use digitalization to improve their launch abilities, will surely have more success with new products and outperform their competitors. Digitalization thus influences new product success. The "relevant digitalization degree" describes the level of digitalization that a company has arrived in the fields relevant for new product launch success. However, as innovation is generally recognized as key success driver in companies' overall success, it can be assumed that all digitalization measures which are driven inside of companies' administrations, would also focus on a better innovation performance, as long as the digitalization measures are executed on the background of a strategic analysis. As a potential driver of productivity within the company, digitalization can boost efficiency of administrational processes, and increase effectiveness. Research has identified the key success drivers of new product launch success. These success drivers lay inside of the organizational processes of companies. If companies focus to improve those organizational processes with adequate digitalization measures, they should also obtain better product launch results. The author of this work has undertaken literature research and expert interviews to identify requirements which are fitting for those digitalization measures that should boost administrational processes in order to obtain higher new product launch success. If a company has undertaken more of these defined digitalization measures and has thus achieved a higher relevant digitalization degree, it should also reach a higher level of new product performance. Therefore, H1 is established accordingly:

H1: Companies who have a higher "relevant digitalization degree" because they have digitalized their relevant organizational processes to a higher level, obtain better launch results.

The relevant digitalization degree is composed 50% by the strategic fit of digitalization measures and 50% by the customer orientation of the digitalization measures (following points).

Strategic fit of digitalization measures:

As expert interviews have shown, and findings from literature conclude, the maturity of strategic orientation which is behind the digitalization measures (=the strategic fit), determines also the quality of implemented digitalization measures and, as a

consequence, of the obtained digitalization degree of a company. This observation is in accordance with findings from the expert interviews which have been undertaken by the author to prepare the survey. Key result of the interviews was, that companies who develop their digitalization measures in accordance with a holistic strategy, take better digitalization measures which assure higher gains from digitalization. Part of the strategic work is an analysis of companies' processes to identify working steps with high standardization potential. Also, the integration of the concerned team members is a criterion. Basing on these findings of the interviews, 10 items have been developed to measure the strategic fit of digitalization measures. If digitalization measures are before the background of a holistic strategic approach, they would bring more results. Therefore, the new product launch success will become more performing, so that H2 is:

H2: Companies, who use a general strategic approach for digitalization and thus have a higher strategic fit of their digitalization projects, obtain higher launch results.

Customer orientation of digitalization measures:

As cited studies show difficulties of companies to enhance digitalization into the organization and to take profit from necessary investments into intangible assets linked to digitalization measures, the digitalization process itself was identified as critical success driver.
Companies who derive their digitalization measures from market- and customer needs, and who act customer-centralized with regard to their digitalization measures, should presumably take more profit from their digitalization process. The market orientation itself has been proved to be linked to the new product launch success. Companies who integrate customers into their product development process, adapt their product proprieties to the market needs and act market orientated, report a higher new product success. New product launch addresses potential and existing customers. Market orientation has been identified as one of the key drivers behind new product launch success. Therefore, the focus on customer expectations when taking digitalization measures should of course raise the success with new products:

H3: Companies, whose digitalization measures are highly influenced by the concept of customer orientation, obtain higher launch results.

Relationship between customer orientation and strategic fit of digitalization measures:

As argued above, the "relevant digitalization degree" is a concept to measure the general digitalization level of a company and is not a concept which is limited only on the new product performance aspect. Not every company that has taken digitalization measures, needs to have improved their product launch skills, for example if the strategic analysis has shown that other company fields are more relevant at present. Within the relevant digitalization degree, the construct "customer orientation of digitalization measures" is closer to the product launch success as it addresses the market view and customer perspective. Therefore, the correlation between this construct and the new product performance should be higher than the correlation between the relevant digitalization

degree and new product performance, as well as between the strategic fit and the new product performance:

H4: The correlation between customer orientation and new product performance is stronger than the correlation between the strategic fit of digitalization measures and new product performance.

Measurement

Questionnaire and sample

A questionnaire has been used to collect data for testing the postulated constructs and hypotheses. Therefore, the survey was sent to ironware trading companies in Germany, Austria and Switzerland which are member of the ironware associations EIS, EDE and NORDWEST. These companies are mainly active in B2B business and sell goods like screws, office equipment, machinery, work security and related C-parts. Overall, the survey has been sent to 2.972 companies. This is a market share of about 80-90% of the overall ironware trading market in Germany. Most of these companies reported to be active in office and furniture equipment (91,3%), and 78,3% were active in the part business for

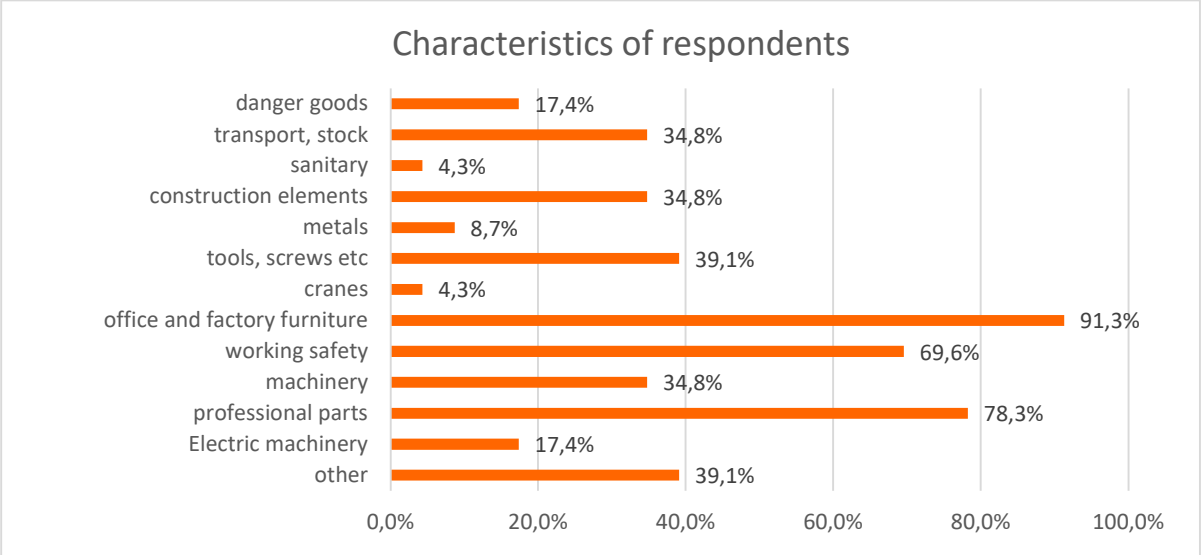

Figure 2: Characteristics of respondents

professional use (78,3%), followed by working safety and tools. Many companies were active in several fields. A self-developed Excel tool and SPSS have been used to collect the data and calculate all necessary data for the regression and correlation analysis. 30 usable questionnaires were returned to be analysed, which represents a response rate of 1%. Part of the respondents has been called before in order to assure a minimum response quote. Due to the simultaneous Corona-pandemic, companies were very reluctant to answer questions and invest time. Despite huge investments into personal telephone calls with the responsible manager, response was very low. Because of the data protection laws in Germany, the associations themselves were mainly unwilling to

promote the survey, which was a further reason for the low interest. The address data which was used to send the questionnaire did not contain more data about company size or responsible persons. Because the pretest already showed the difficulty of low response to be expected, the questionnaire was designed as easy as possible to avoid further response weakness. It did therefore not contain further questions about company size, sector or other data. As a consequence, no additional data than shown in table 1 is available.

Measurement and Measures

The empirical data from the survey has been used to find out if there are links between the relevant digitalization degree of a company, customer orientation of digitalization measures, strategic fit of digitalization measures and new product performance.

All constructs were measured using multi-item seven-point Likert scales. In order to measure the strength of a construct, objective or subjective measures can be used. Generally, subjective measures tend to be biased by the personal proprieties of the recipients. Nevertheless, several studies could prove a high correlation between subjective and objective measures (Dess and Robinson Jr, 1984; Venkatraman and Ramanujam, 1987; Song and Parry, 1997). As the collection of objective data was not possible because they were not published by both the recipients and the sample, subjective data had to be used.

The mentioned scales were developed according to previous literature **for the new product performance construct**: A standard survey design has been used which had been developed by Calantone & di Benedetto (2012), and Song and Parry (1999). It has been slightly modified in order to match the particularities and needs of this survey. For example, instead of evaluation one new product project, the participants should evaluate all new product launches within the last 5 years. Also, as the studies of Calantone & Di Benedetto (2012) and Song & Parry (1999) were executed among production companies, but the current study has been sent to traders, the questionnaire contained instructions which explained to the recipients that they should refer to newly listed products within their product range, instead of self-developed or self-produced products. According to the author of this paper, the transfer from production companies to traders is appropriate, because the specific characteristics and challenges of launching a new product, is comparable to traders as also to production companies: Both do not have experience with the new product, and the measures towards potential buyers are different to normal products. Therefore, even though some particular measures are different between trade and production companies, new products stay comparably different in both sectors.

Normally, new product launch success (sometimes called: New product performance) is generally measured comparably within current studies. Indicators are used like “overall profitability of the product after a certain time”, “obtained market share”, “obtained sales”, or “achieved situation compared to planning”. So, a new product launch project has usually a time horizon of several years which makes it difficult to evaluate success.

Therefore, within this study, a horizon of five years (new product projects within the last five years) has been set, in order to assure relevant results. The construction of the indicators and constructs has also been chosen in accordance with future objectives: They should prove to be qualified for future research.

For the relevant digitalization degree, self-developed scales have been used. In order to develop a measureable concept of "digitalization", expert interviews have been undertaken with digitalization experts: Strategic and technologic consultants, business agencies and software freelancers. Objectives of the interviews was to identify activity fields within companies' administrations where digitalization creates the most benefit; Also to find out which are the fields were digitalization can be used to improve new product launch performance; And to identify requirements and challenges during the digitalization process. The answers have been combined with the findings from literature research about new product launch success factors, and the effect of digitalization on companies. Basing on the interview, fields that are relevant for digitalization measures in order to improve the product launch process, could be identified. During the interviews, it became clear that the concept of "digitalization" cannot contain fixed fields. The effectiveness of digitalization depends more on the digitalization procedure itself, whether it is customer driven, and strategically well conducted. These findings are in congruence with the citated studies which reveal the link between investment into intangible assets to enhance digitalization skills and the difficulties companies have with that procedure. So the "relevant digitalization degree" is conceptualized as indicator consisting of the strategic fit of digitalization measures and customer orientation of digitalization measures. So the overall digitalization degree consists of these 2 factors. For the purpose of this survey, both indicators have been weighted 50/50 in order to get the "relevant digitalization degree" of the company.

Reliability

In order to check reliability of used scales and indicators, Cronbachs'alpha has been used (Carmines and Zeller, 1979; Fornell and Larcker, 1981). Table 2 indicates results. All values were between .92 and .97. Inter –item correlations have mainly been between .70 and .90, with only one item under .50. This implies a high construct consistency and a good model fit (Peterson, 1994).

Table 1: Reliability of measurement

Construct	Item no.	Cronbach's α
New product performance	8	.943
Strategic fit of digitalization measures	10	.978
Customer orientation of digitalization measures	8	.923
Relevant digitalization degree	18	-

Validity

Seven- level Likert-Scales have good testing proprieties (Krosnick and Fabrigar, 1997). For the means of this article, validity has been obtained by using multi-item scores which are derived from frequently used questionnaires in the case of new product

performance, and from expert interviews in the case of digitalization measures. Likert scales whose content have been strictly separated according to their topics assure high content validity (Kuhn, 2007). Convergence validity has been confirmed by high inter-item-correlation (Peter, 1981). Also, the characteristics of an anonymous and closed online panel supports validity of the results. The high obtained model fit and good reliability measures support high convergence validity (Nunnally, 1978).

4. Results

SPSS and a self-developed Excel tool have been used to determine the relevant figures for the correlation and regression analysis. The correlation coefficient according to Pearson has been used. Requirements for regression analysis have been fulfilled (Fisher, 1925). Explorative methods showed a linear link, normally distributed residuals and normally distributed findings.

Table 3 shows the results. Most of the hypotheses were significant at the α=0.05 level. The correlation between the relevant digitalization degree and new product performance was .63 (t=4.3, p<0.01), H1 was confirmed. There is a positive link between digitalization measures and new product performance. The correlation between the strategic fit of digitalization measures and new product performance was .55 (t=3.53, p<.05), supporting H2. A positive link between customer orientation of digitalization measures and new product performance has been found. H3 was thus supported (correlation .67; t=4,8; p<0.01).

Table 2: Descriptive statistics and correlations

	Mean	SD	correlations	n
new product performance	4.20	1.05	1.00	30
Strategic fit of digitalization measures	4.16	1.68	.55*	30
Customer orientation of digitalization measures	3.95	1.25	.67**	30
Relevant digitalization degree	4.06	1.40	.63**	30

*p<0.05; **p<0.01

The comparison of effects between strategic fit of digitalization measures / customer orientation of digital measures and new product performance was topic of H4, assuming that the link between customer orientation of digital measures and new product performance would be stronger than the effect of strategic fit of digital measures. Even though correlation of customer orientation is stronger according to the findings (.67 compared to .55), results are not significant (p-value = 0.28). As a consequence, H4 cannot be supported.

A view on the standard deviation shows, that they are also quite low (1.05-1.4), expect for the strategic fit construct which reported 1.68; Here it is again to notice the small number of participants, which can create high deviations.

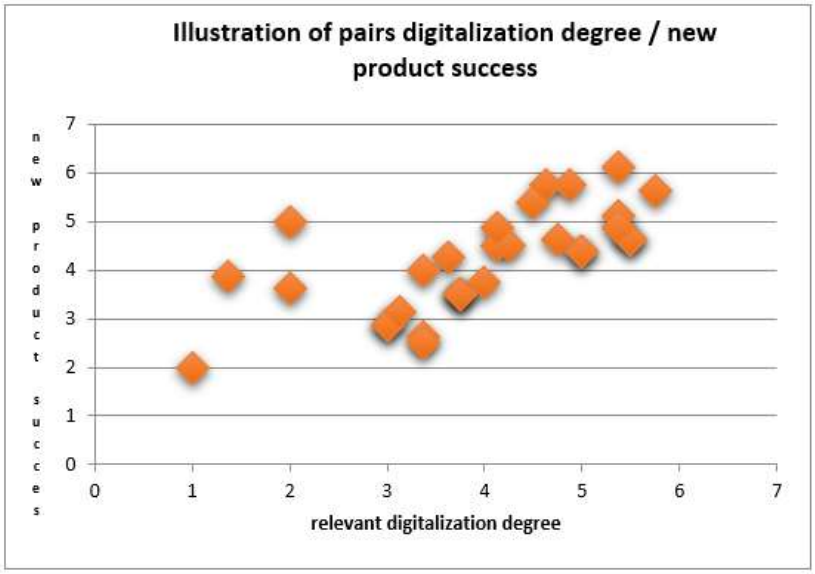

Figure 2: Illustration of pairs

Regarding the objective of this work to find a linear link between digitalization and new product success, a regression analysis has been employed. Therefore, a linear regression model based on multiple squares has been engaged. The results are represented in table 4. It describes the relationship with the formula $Y = 2.27 + 0.47 \times X$. The r^2-value is used as a measure to evaluate the model fit (Judge *et al.*, 1988). Here it is .40, representing a high model fit (Cohen, 2013). Related to the illustration in figure 2, the linear relationship is also made intuitive. The linear link between new product success and digitalization is .47 with an y-intercept of 2.27.

Table 3: Results descriptive statistics

A	2.27
B	.47
R^2	.40
F	18.7

5. Discussion

Except H4, all hypotheses could be confirmed. The failure of H4 can be explained by the small number of study participants. Although the correlation between customer orientation in digital measures and new product success was higher than the correlation between the strategic fit in digital measures and new product success which was demanded in H4, the hypothesis lacked support because the results were not enough significant. Therefore, a bigger survey would be needed to explore the link further. All confirmed hypotheses showed higher correlations than 0.5, showing a strong link

(Cohen, 1992; Sedlmeier and Renkewitz, 2013). The result of the study is that digitalization can strongly boost new product success. This finding confirms tendencies in literature which attribute productivity gains to digitalization In accordance with similar results (Weller, Kleer and Piller, 2015, 2015; Eichhorst *et al.*, 2017), digitalization reveals to be a booster of process outcome and thus increase productivity. As well the focus of customers is a strong driver of launch success, as also the strategic fit of digitalization measures. That means, companies who integrate the customer view and customer needs as a basis for their digitalization measures, obtain better new product performance. These findings are also confirm other studies (Kuhn, 2007; O'Dwyer and Ledwith, 2008; Calantone, Di Benedetto and Song, 2011) that could identify a positive influence of market orientation on new product launch. Also, companies who use a holistic strategic approach and integrate all concerned team members when determining and implementing digitalization measures, are more successful with new products. This finding supports also other studies that identify the importance of the strategic aspect for success in digitalization measures (Rogers, 2003; Kane *et al.*, 2015; Weller, Kleer and Piller, 2015; Verhoef *et al.*, 2019). Companies who are therefore highly digitalized, obtain better launch results. The right digitalization measures help companies to reach more success with new products.
The high correlation between digitalization degree of a company and new product launch in this study is impressively high, taken into account the small number of recipients. Although only 30 companies were willing to edit the online survey, most results were significant on the $p<0.01$ level, with strong correlations between .55 and .67. The R^2 figure and the F-value indicate a medium-good model fit, which, however, could also be attributed to the small number of participants. With a bigger number of answers, results might have created a stronger model fit. An observation of the survey is namely some resulting untypical clusters which need to be explained.

Some companies report weaker new product success, than would be expectable with the regression model, as they took some digitalization measures and obtained relatively high digitalization values. The finding could be explained by other factors. Digitalization is not enough to create new product success, there are also other requirements. The author of the work called some companies to find out that some markets depend on special legal regulation; therefore, their need of new products is low. With a low level of new products and disposing about this legal support, new product success can be low even though digitalization measures are taken. Then, these digitalization measures, even though heading on the customer's perspective and strategically fitting, can boost other success in the company than new product success. Digitalization measures could be meant for other targets than improving new product performance. Even though we suppose that new product development is one of the most important things, and thus digitalization measures would directly be taken in order to boost new product performance, this might not be the case for every company. Interesting is also a company cluster which consists of participants that have a low invest into digitalization, but high product launch success. These results could be explained by other factors that have been revealed in ancient studies presented in the literature review and which create new product success. When talking to some companies who filled the survey, the author of this study was informed that some very successful companies dispose about a strong and performing sales force. This finding is in accordance with studies highlighting

the importance of sales force and launch execution (Ernst, Hoyer and Rübsaamen, 2010; Calantone, Di Benedetto and Song, 2011; Fraenkel, Haftor and Pashkevich, 2016). Companies that are currently successful might at the moment does not need to invest into digital tools and strategies, even though on the long term, this lack of investment could have a negative impact on their new product success.
A general problem of the study is the lacking abilities to measure real cause-consequence-relationships. Even though the correlation between new product performance and digitalization is proved, it could be created by a third variable. Ancient studies reveal that companies which are open to innovation and have an open mindset, are generally more successful with innovation projects. (Hauschildt *et al.*, 2016; Campos *et al.*, 2017). These companies would therefore report higher new product success AND high digitalization degrees as they invest into innovative tools. Their innovative mindset explains both new product launch success and high digitalization degree. The correlation in that case, would be explained by a third variable: Innovative mindset. However, if this is the case, it proofs that successful innovative companies use digitalization and are successful with it, which, after all, also confirms the found links within this study.

The results of this study are limited for the moment because it is only conducted in trading business. Other sectors might have other results. Trade is focused on buying and selling products. Therefore, administrational processes have a higher significance than in producing companies. The survey was mainly designed for administrational processes. Can digitalization measures heading on administration cause the same success in companies where other functions (e.g. production) are more important than in trading business? This would be a further question for future research.
Also, the current study only highlights the general link between digitalization and new product performance. This view does not explain the functioning and reasons for the link in detail. It would be worthwhile to understand, which ingredients of digitalization measures, create new product success. Some studies attribute mindset and organizational culture issue to performance, especially in SME. Here, the role of an innovative and entrepreneurial-orientated strategy (Pett, Francis and Wolff, 2019) is researched, or the role of flexibility and coherent culture (Shepherd and Haynie, 2009; Bouncken and Barwinski, 2020). Companies who have an innovative mindset, are more successful and, as a consequence of their innovativeness, take more digitalization measures. And the other way round, it was found that digitalization mediates the influence of corporate culture on performance (Suifan, 2020). Therefore, it would be worthwile to understand more about the relationship between these factors, and the input of digitalization. On an operational level, some tools could be identified that boost new product launch, raise productivity of key administrational processes or decrease costs. Future research would be needed to study this link. A third field for future research would also be desirable: Studying those companies who have high new product success and a high digitalization degree. It was a key finding in the literature review that digitalization is a challenge for many companies, which is linked to high investment into intangibles and a high risk of failure. If taking the wrong measures, or implementing the right tools in the wrong way, the whole investment could be sunk. Until now, not enough has been researched on the question, what do companies better than others who fail,

when it comes to their digitalization process? Within this context, the result of this work was a questionnaire design which measures digitalization degree of a company. This questionnaire could serve as a starting point to develop a valid indicator that would allow to compare companies and show which development potential some companies still have to take fruitful digital measures.

6. Conclusion

The study shows a strong link between both aspects of digitalization (customer orientation of digitalization measures, and strategic fit of digitalization measures) and new product performance. The right digitalization measures can boost new product success within companies. Further research has to be done to explore the character of the relationship between digitalization and new product success and identify suitable tools, best-practices and effects behind the general link. Also, the results of this study have to be transferred to other markets. The project of the author of this work is to further investigate the link between new product success and digitalization in the German B2B production market.

Managerial implications:

The findings of this work can confirm the claimed hypotheses. Companies who use a holistic approach, integrate all affected team members and take digitalization measures before a general strategic background, chose better digitalization measures and perform better with implementing their digitalization measures and obtain higher success with new products. Second ingredient to create success, is customer orientation. Companies who chose their digitalization measures to obtain value- added for their customers, can take more profit from their digitalization measures. For managers, it is important to engage in digitalizing relevant parts of their company. The right digitalization measures can help to improve new product launch success. Therefore, managers must analyse their business environment to find out which are the best digitalization measures for their individual business case. By doing it, they have two main directives that they should both focus on: First, they should include general strategic considerations and handle their digitalization measures as a part of the general strategy. Second, they can improve the chance that the digitalization will bring success also by focussing on the customer. Digitalization measures should be used to solve customer problems and improve service. Altogether, if digitalization measures follow the path of these two directions, new product launch success becomes more probable.

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Appendix. Measurement scales of constructs

(Respondents were asked to answer the following questions by email, using an Excel and PDF file, by choosing the most suitable option on a Likert seven-point scale).

Continuum: very succesless – very successful

New product performance (Calantone & di Benedetto (2012), and Song and Parry (1999))

How successful were these product launches from a general profit/loss view?
Compared to earlier product launches, how successful were these launches related to the profit?
Compared to earlier product launches, how successful were these launches related to the obtained sales numbers?
Compared to earlier product launches, how successful were these launches related to the obtained market share?
Compared to product launches from competitors, how successful were these launches related to the profit?
Compared to product launches from competitors, how successful were these launches related to the obtained sales numbers?
Compared to product launches from competitors, how successful were these launches related to the obtained market share?
In relation to the planning, how successful were these launches?

Continuum: strongly agree to strongly disagree

Strategic fit of digitalization measures (own developed scales):

Related to the digitalization strategy of your company: Think of the steps which have been implemented within the last 5 years. How much do you agree to the following statements?
We have a mature digitalization strategy.
The digitalization measures that have been taken, are embedded in an overall strategy.
We handle the digital transformation of our company as a holistic development process.
The salaries feel involved into the transformation process.
The measures that have been taken to digitalize, are linked to a general concept of digitalization.
Our digitalization concept is a part of the overall company's strategy.
We have digitalized most of the processes alongside the value chain.
We have analyzed our processes before deciding on digitalization measures.
The salaries have the impression that the taken digitalization measures make sense.
The digital tools, applications and programs that we use, are in accordance with the digitalization strategy.

Relevant digitalization degree (own developed scales):

Related to the digitalization strategy of your company: Think of the steps which have been implemented within the last 5 years. How much do you agree to the following statements?
When we chose a new product, it happened basing on an analysis of the "customer journey "
The customer perspective is starting point of our digitalization strategy.
New products are listed from us as an answer to what we find out about our customer, using digital market research tools (e.g. AI-applications)

The analysis of customers' value-addeds processes is a starting point of our digitalization efforts.
The analysis of customer needs is a starting point of our digitalization efforts.
Our digitalization strategy is mapped around the question: What is the use for the customer?
Our digitalization measures facilitate processes at the customer.
Our digitalization measures create a value-addeds in the customer's process chain.