

Study of applied instruments, methods and procedures for the integration of customer-based innovation in SMEs

Agenda

Aim & Methodology

Framework conditions

Trends in digitalization

Tools methods of customer-based innovation – Analog vs. digital

Application notes

Dissemination

- *Identify the status of research on customer-centric innovation methods*
 - *Identify trends in digitization*
 - *Collection of digital technologies to realise customer innovation*
 - *Development of a toolbox with instruments, methods and procedures for customer innovation*
 - *Develop application notes for SMEs to realise customer innovation*
- *Identifying key barriers and enablers for the realisation of customer innovation via digital tools*

Methodology

- **Multivocal Literature Review**
 - **Form of Systemic Literature Review including**
 - Grey literature (blog posts, videos and white papers)
 - Formal, published literature (journal and conference papers)

- Necessity to align innovation activity with current and potential customer needs
- Customer-centric innovation is done with customers – interaction of organizations and customers to innovate together
- Create framework to allow customer-centric innovation without geographic and time constraints
 - Dynamic engagement of customers
- Strengthen competitiveness of SMEs
- Consideration of SME specific obstacles and enablers

Customer-centric innovation:

- Innovation with customers
 - Customer as a primary source of ideas to initiate innovation activities
 - Companies open their research and development activities (open innovation)
 - Customer integration throughout the whole innovation process
- Aims to meet needs and expectations

- Artificial intelligence
 - Ability of computers to perform data analysis without human interaction
- Internet of Things (IoT)
 - Communication networks where objects are equipped with sensors for autonomous interaction
- 3D printing
 - Allows prototyping and immediate testing of products
- Digital platforms
 - Network of connections allowing direct communication and interaction between stakeholders

- Digitalization changes the way to do business
 - Rapid communication
 - Constant availability of data
 - Spatial distances lose relevance
 - Increasing competition
- Role of customers changed from a passive to an active role
 - Customers demand products and services
 - Take role of an active co-designer
 - Helps to improve product quality, reduces risk of market failure and increases market acceptance

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Benefits of customer-centric innovation:

- Increasing customer loyalty
- Companies get to know their customers, their lives, work processes, value chains and value systems
- Builds up trust between company and customers

Analog Methods:

- Lead-user:
 - Selection of lead users that mirror future market needs
- Experiments:
 - Involvement of different user groups (experts & non-experts)
 - Allows comparison of knowledge and points of view
- Living labs:
 - Creating spaces (e.g. homes) to gather impressions from the real world to understand customer behaviour
- Customer group involvement:
 - Regular meetings with customers to develop joint solutions for existing methods
- Outcome based interviews:
 - Identifying customer needs through targeted interviews (e.g. purpose of products and services)

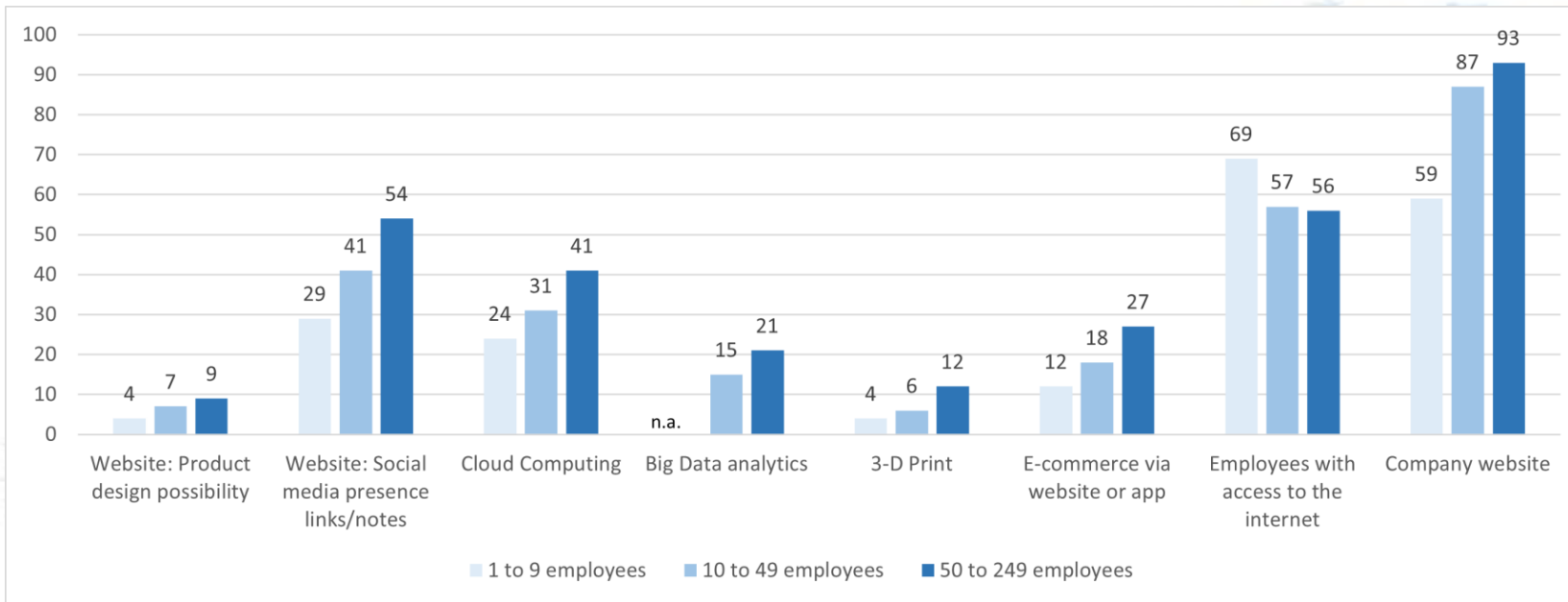
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Digital Methods:

- Company website
 - Basic tool for company presentation & customer contact
- Customer relationship management tools
 - Clear responsibilities for customer management to capture customer needs
- Cloud services e.g. Emails
 - Basic tool for exchange with customers & networking activities
- Social Media (e.g. Facebook, Instagram, Blogs, Forums)
 - Tool to interact with customers real-time, fast communication, quick surveys to involve customers
- Big Data
 - Allows in-depth analysis of customer behaviour
- Web 2.0
 - Allows targeted information sharing via creation of productive platforms (e.g. social-tagging, wikis, Chatbots)

Applied digital tools - Germany



- Company website is the most popular tool
- Social media is also a common tool to interact with customers
- Big Data analytics and 3-D print are not yet a common tool in SMEs

Framework conditions for digitalization of SMEs

Obstacles of realising customer-centric innovation by digital tools

- IT security
- Lack of digital skills for customer-centric innovation
- IT infrastructure
- Regulations & legal environments
- Resources (financial and human capital)
- Lack of clear responsibilities
- High investments and training costs

Framework conditions for digitalization of SMEs

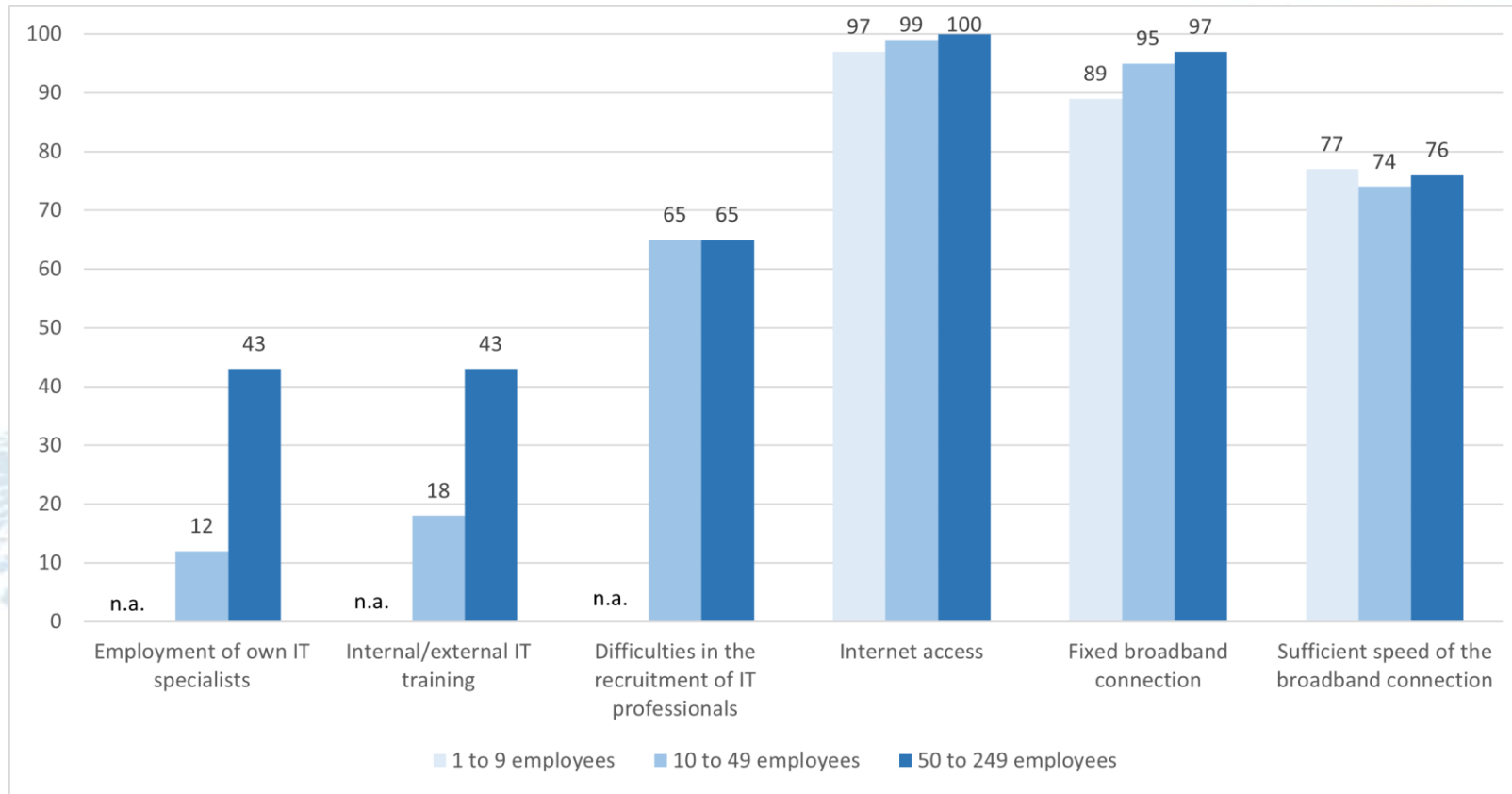
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Benefits of digital tools for customer-centric innovation

- Data collection & analysis
 - Knowing your customers, their needs, habits and preferences
 - Improved customer segmentation
 - Development of targeted organisational strategies
- Realtime communication
- Identification of market trends and changes in demand
- Gathering customer feedback

Framework conditions for digitalization of SMEs - Germany



- Framework conditions vary between the company sizes
- Shortage of human resources
- Utilization of trainings
- Availability of IT infrastructure

General aspects

Cultural & Social	Digital expertise	Communication
<ul style="list-style-type: none">• Understand dynamics of customers• Clear communication• Systemic integration of customers• Align organizational structures to allow customer innovation	<ul style="list-style-type: none">• Find a common language to talk about digitalisation• Data security• Create infrastructure• Segmentation of involved personnel	<ul style="list-style-type: none">• Common language• Complex issues require in-person interaction• Transparency• Avoid information overload• Involve existing & potential customers• Be authentic

Critical aspects of customer innovation

- Identifying individual solutions („mesh“ - mix of analog/ digital that fits to company’s resources and needs)
- Digital tools can be resource-saving
- Tools should be easy to use for SMEs and customers
- Regular interaction
- In-person interaction fosters the transfer of sticky knowledge and minimizes communication issues

Innovation stage	Applicable tools
Market research / Exploration	Forums, blogs, E-Mail, Social Media (active), Social Media (passive), Interviews, Surveys, Observations, Test groups, Living labs, Diary Search, Crowdsourcing
Idea creation	Simulations, Visualizations, Living labs, Support Team, Social Media (active), Social Media (passive), E-Mail, Test groups, interactive company website, Q&A
Prototype development	Living labs

Innovation stage	Applicable tools
Prototype testing	Simulations, Visualizations, Social Media (active), Focus Groups, Interviews, Observations, Test Groups
Product and service development	Chat bots, Support team, Social Media (active), Social Media (passive), Interviews
Commercialization	Company website, Social Media (active), Online advertisement, Field tests, Newsletter, Blogs, Forums, Content marketing

Mesloh, M. (2021) *Digitale Integration – Chancen für kleine und mittelständische Unternehmen in Deutschland*. Wirtschaftsdienst, 101(6), 461-465

Hogeforster, M.; Henke, M.; Mesloh, M.; Zajkowska, M. (2021) *Recent developments and challenges of customer-based innovation through digital tools in SMEs*. CIBMEE International Scientific Conference

DOI: 10.1007/s10273-021-2942-1

Analysen und Berichte Digitalisierung

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Digitale Integration – Chancen für kleine und mittelständische Unternehmen in Deutschland

Die Nutzung digitaler Technologien zur Entwicklung innovativer Geschäftsmodelle und interner Prozesse bietet kleinen und mittelständischen Unternehmen die Möglichkeit, auf externe Veränderungen agil zu reagieren. Jedoch zeigt ein internationaler Vergleich der digitalen Wettbewerbsfähigkeit der EU28, dass Deutschland in diesem Bereich Nachholbedarfe hat. Um sich zukünftig im internationalen digitalen Wettbewerb positiv zu positionieren, bedarf es einer gestärkten digitalen Integration der kleinen und mittelständischen Unternehmen, die das Rückgrat der deutschen Wirtschaft bilden. Die bisherige digitale Integration wird untersucht, und die Vorteile und Barrieren der digitalen Integration werden hervorgehoben.

Die Bedeutung von kleinen und mittelständischen Unternehmen (KMU) für die deutsche Wirtschaft ist wohlbekannt. Oft als Motor der deutschen Wirtschaft bezeichnet, repräsentieren KMU über 99 % aller deutschen Unternehmen (Destatis, 2020), beschäftigen mehr als 71 % aller Erwerbstätigen des Landes (KW, 2020) und erwirtschaften rund 43 % der Bruttowertschöpfung in Deutschland (Destatis, 2020). Unter Rücksichtnahme dieses hohen Stellenwerts für die deutsche Wirtschaft ist insbesondere seit Beginn der COVID-19-Pandemie und der damit einhergehenden wirtschaftlichen Einschränkungen das politische und gesellschaftliche Interesse an den Geschäftsaktivitäten von KMU zunehmend in den Diskussionsfokus gerückt. Im Rahmen der Kontaktbeschränkungen und Schließungen stehen viele traditionell offene geographische Unternehmen vor neuartigen Herausforderungen. Die digitale Integration bietet die Möglichkeit, diesen Herausforderungen durch die Weiterentwicklung von bestehenden Geschäftsmodellen, sprich der Art und Weise wie die Leistung eines KMU erbracht wird, zu begegnen. In diesem Kontext beschreibt der Begriff digitale Integration in enger Anlehnung an die digitale Transformation den Wandel von zuvor nicht digitalen Leistungen zu digitalen Abläufen (Yoo et al., 2010).

So vielseitig wie die unterschiedlichen Ansprüche und Anwendungsfälle von digitalen Lösungen in den Geschäftsaktivitäten von KMU sind, so vielfältig ist auch deren Auswahl. Neben grundlegenden Lösungen wie z. B. dem Betreiben von Websites und der Nutzung von E-Mail (Castagna et al., 2020) über die Nutzung von Cloud-Computing-Diensten (Kim und Lee, 2015) oder einer aktiven Nutzung von Social-Media-Plattformen (Casarini und Konsoli, 2015) bis hin zur Gestaltung von digitalen Produktionsschritten im Rahmen von Industrie 4.0, additiver Fertigung oder Big-Data-Analysenmethoden (Gonthier et al., 2017; Loebbecke und Ploot, 2015; Rayna und Strulikova, 2016) bieten digitale Technologien KMU einen breiten Spielraum, um individuelle Lösungen zu integrieren.

Generell ermöglicht die digitale Integration den KMU, ihre Wettbewerbsfähigkeit im Rahmen von erweiterter Geschäftsaktivitäten zu sichern oder gegebenenfalls auszubauen. Im Hinblick auf die digitale Wettbewerbsfähigkeit von deutschen KMU im europäischen Vergleich sind Chancen und Hemmnisse der digitalen Integration erkennbar. So belegte Deutschland 2019 den zwölften Platz der digitalen Wettbewerbsfähigkeit im EU28-Vergleich (Europäische Kommission, 2020). Wie Abbildung 1 verdeutlicht, weist Deutschland insbesondere einen Verbesserungsbedarf im Bereich der Integration von digitalen Technologien in Geschäftsstrukturen auf. Hier belegte Deutschland den 18. Platz im EU28-Vergleich (Europäische Kommission,

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¹ Dieser Beitrag ist im Rahmen von „Digital methods, toolbox and trainings for increasing customer-innovation in SMEs (CIBMEE)“ entstanden, gefördert durch das Programm Erasmus+ der EU.

International Scientific Conference
CONTEMPORARY ISSUES IN BUSINESS, MANAGEMENT AND ECONOMICS ENGINEERING 2021
13–14 May 2021, Vilnius, Lithuania
Vilnius Gediminas Technical University

eISSN 2538-8711
pISSN 078-004-475-200-4
Article ID: cibmee.2021.034
<https://doi.org/10.3846/cibmee.2021.034>

RECENT DEVELOPMENTS AND CHALLENGES OF CUSTOMER-BASED INNOVATION THROUGH DIGITAL TOOLS IN SMEs

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Received 28 February 2021; accepted 10 March 2021

Abstract. Purpose – the purpose of this paper is to map out the current state of customer-based innovation through digital tools in small and medium-sized enterprises (SMEs), highlighting advantages but also challenges, tools, methods and procedures involved.
Research methodology – a twofold methodology comprising desk research and literature review is drawn upon.
Findings – the authors conclude that customer-based innovation can be crucial for the success and resilience of SMEs and thus, the European economy. In order to provide SMEs with practical advice, further empirical research on the use of digital tools for customer-based innovation in SMEs is needed.
Research limitations – this research paper is limited to a theoretical scope and serves as a preparatory research for quantitative and qualitative surveys that will be run in various EU countries after the publication of this paper.
Practical implications – this research paper is relevant for SME managers, advisors and researchers that are interested in digital customer-based innovation in companies. Based on the theoretical framework provided in this paper, concrete training and education measures in the field will be developed.
Originality/value – the assessment of feasible customer-based innovation measures in SMEs is crucial in order to secure their competitiveness and productivity, especially for companies in north-eastern Europe that are competing with low-wage countries. Based on this paper, further concrete empirical research, training and education measures will be developed.

Keywords: SMEs, innovation, customer-based, digital tools.

JEL Classification: O31, O34, M14.

Conference topic: Business Processes; Development, Digitalisation, Social Responsibility.

Introduction

Staying innovative in a digital world represents one of today's major challenges for small and medium-sized enterprises (SMEs). Moreover, productivity and customer satisfaction is of crucial importance for their growth in the twenty-first century. While SMEs play a key role in Europe's economy, constituting for 99% of all businesses in the EU, they are facing severe constraints when it comes to innovation due to resource scarcity. As highlighted by Stich, Zeller, Hicking, and Kraut (2020) SMEs in particular often lack the financial and time resources as well as fundamental digital expertise to integrate the potential of digital tools in their daily work and in the further development of business models. According to the European Commission's fact-sheet on SMEs (2020a), in fact only 50% of all SMEs in the EU undertake innovation activities and only 17% of all SMEs have successfully integrated digital technologies. Even if it can be questioned whether all SMEs benefit from innovations (Kosamburath et al., 2011), it is evident that most companies need to engage in innovation activities in order to stay competitive in the globalised economy nowadays (Hogeforster, 2014; Okazawa & Fulla, 2009). This holds especially true for companies in north-eastern Europe, which otherwise cannot compete with low-wage countries.

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