

Digital Technologies Within the DIY Store: A Systematic Literature Review

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Abstract

Digital technologies and the resulting changes have a massive impact on economic, political, and social levels. The challenges this creates result in both opportunities and threats for numerous sectors. Successfully managing the transformations arising from digital technologies will be a formidable challenge in the future. These changes are also having a massive impact on the retail sector, which is also facing unprecedented challenges. The purpose of this paper is to deliver a contribution for management research, by providing a systematic overview of which digital technologies are being used within the brick-and-mortar stores' POS (point of sale) in the DIY sector, and how successful they are. The underlying methodology of this paper is a systematic literature review of academic research on digital technologies used within DIY (do-it-yourself) stores to provide a current state of research in a gathered, examined, and synthesized manner. To achieve this objective and ensure consistency in the execution of the review, it has been completed following a detailed review protocol. Based on a search on Business Source Premier, EconLit, IEEE Xplore Digital Library and ACM Digital Library databases over a recent period of ten years, all relevant studies on digital technologies in the DIY sector were identified and applicable information from each study was systematically extracted. The paper yields a systematic overview and important insights into digital technologies being used in the DIY sector. A comprehensive conceptualization of these technologies has been provided, categorizing them into the most important main areas. There are numerous studies in the scientific literature on digital technologies and the resulting digital transformation. However, explicit investigations into the area of the DIY sector are minimal. This is, even though sales in the DIY sector were 701 billion euros worldwide in 2020 (DIY International, 2021). For this reason, the added value of this article for scientists and practitioners lies in providing a comprehensive conceptualization of the scientific literature on the application of digital technologies in the DIY sector. In addition, appropriate proposal recommendations for action for decision-makers in this and additional industries are presented.

Keywords: Digitization, Digital Technologies, DIY, Hardware Stores, Point of Sale, Unique Selling Points, Competitive Advantage, Marketing, Strategic Management.

JEL Classification: M10, M31, M37.

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Introduction

Digitization has a massive impact on the economy, society and the state (Lindemann, 2019: 87 ff.) (Kröhling, 2017: 41 ff.). The resulting digital transformation poses the question to companies of all sizes and in all sectors as to what effects new ideas, new technologies and new forms of work will have on their business model or even on the survival of their own company (Gröschel & Leuchter, 2020). While the topic of digitization is certainly not new, there are always new developments and trends that need to be assessed (Greiner et al., 2017: 19 ff.) (Gröschel & Leuchter, 2020: 1 ff.): Augmented Reality, Blockchain, Big Data analytics, artificial intelligence or the Internet of Things are just a few examples of developments that are considered critical to the success of companies (Müller & Lang, 2020) (Knoppe, 2018).

The effects of the rapid progress in digitization are also evident in retail, creating both opportunities and threats: The closure of numerous supermarkets, specialist shops, department stores or shopping malls shows, among other things, the risks digitization can lead to (Jahn, 2016: 25). On the other hand, digitization has numerous opportunities. Multitudinous examples show how small and large retailers have successfully mastered digitization. However, the focus needs to be on how to use digital technologies in a targeted manner to satisfy the consumer. The focus here is on the quality and not the quantity of the digital technologies that are offered to the consumer (Knoppe, 2018: 1 ff.). However, these fast-moving times pose a major challenge for traders to access an overview of which digital technologies are currently available and identify the suitable ones for trading. The reason for this is an unmanageable number, diversity and variety of such technologies (Lipsmeier et al., 2018: 31) (González et al., 2016).

With a turnover of 701 billion euros worldwide in 2020, the DIY sector, also known as the hardware store industry, has a large share within the retail industry (DIY International, 2021). The hardware store sector also differs from other retail sectors in that the products sold often require explanation or advice (Ternès & Schieke, 2018: 34) (Köster, 2008: 154). For this reason, digital technologies must be examined from the point of view of the hardware store trade, providing an ordered and neatly arranged overview illustrating which digital technologies are being used at the DIY brick-and-mortar-stores' POS, and to what success. Since such an overview is currently not available, this paper aims to provide such a conspectus for practitioners and consultants with appropriate recommendations for action. With this article, the authors intend to provide an insight into the current scientific discussion of this topic, while focusing strongly on practical relevance and application to provide decision-makers with a guide.

Theoretical Background and Context

Digitization. To get an understanding of the term “digital technologies”, first to understand the terms “digitization” and “digital transformation”. The term digitization itself refers to the pure conversion of analogue to digital data. This enables cost reductions, unlimited reproducibility, worldwide distribution within seconds, machine-evaluation, or further machine-processing (Kröhling, 2017: 24). Thus, digitization of analogue information leads to profound changes, which are reflected in the use and application of information and communication technologies, changed business models, as well as in the organization and in the processes of companies (Becker et al., 2013) (Kröhling, 2017: 24). Therefore, digitization is also used when analogue processes are partially or even completely replaced (Deeken & Fuchs, 2018: 9). It can lead to extensive changes at several levels, such as production, data collection, order processing, and management (Harwardt, 2020: 3).

Digital Transformation. Although the term digital transformation is an integral part of current discussions in politics and the media, there are various common definitions of digital transformation, so there is no universal definition. Some definitions focus on companies, while others focus more on the digital transformation in the areas of people's lives and society. The only thing they have in common is that most definitions of digital transformation do not equate to the simple replacement or conversion of analogue data or processes (Harwardt, 2020: 10 ff.). As a basis for this paper, the authors use the definitions of Ebert & Duarte (2018), Schallmo & Rusnjak (2017: 7) and Hawardt (2020: 12). Ebert & Duarte (2018) define digital transformation as the introduction or use of digital technologies to increase productivity, create value or improve social welfare. They also show different objectives that are expected to be reached through digital transformation and differentiate them according to two perspectives: social and economic (Table 1). Schallmo & Rusnjak (2017: 7) and Hawardt (2020: 12) clarify the focus on companies even more: Schallmo & Rusnjak (2017: 7) describe the digital transformation with changes brought about in companies that are based on enablers. Enablers are defined as technologies that open up new opportunities or can be used for optimization. Hawardt (2020: 12) adds that these changes are deliberately brought about and pursue specific objectives, e.g. optimizing business models or increasing consumer value. Digital transformation is, therefore a process. Since this paper deals with digital transformation in the same context as the previous definitions, it will be used as a basis.

Table 1. Digital Transformation Goals

Perspective	Objective
Social	Foster the development of a more innovative and collaborative culture in industry and society. Change the education system to provide new skills and future orientation for people so they can achieve excellence in digital work and society. Create and maintain digital-communication infrastructures, and ensure their governance, accessibility, quality of service, and affordability. Strengthen digital-data protection, transparency, autonomy, and trust. Improve the accessibility and quality of digital services offered to the population.
Economic	Implement innovative business models. Increase income generation, productivity, and added value. Improve the regulatory framework and technical standards.

Source: Ebert & Duarte, 2018, p. 17

Digital Technologies. After explaining the terms digitization and digital transformation, the term digital technologies are explained below. In general, as with the term digital transformation, there is no single, uniform definition of digital technologies. This term can also be viewed from different perspectives. From a technological point of view, it is defined as a process that enables handling huge amounts of information. Another view of digital technologies is the application perspective. It describes what can be achieved with digital technologies (Janasz, 2018: 92 ff.). In this context, McDonald & Rowsell-Jones (2012) state that digital technologies such as social media, big data or predictive analytics “touch the customers directly and in that interaction, create a source of digital difference that matters to value and revenue” (McDonald & Rowsell-Jones, 2012). Based on this and other definitions, Janasz (2018: 93) describes digital technologies as, among other things, enablers for “providing network-based connectivity anytime, anywhere and on any device” and “providing generalized applications, such as one-stop-shop services (e.g.: identification, planning, booking, payment and billing)” (Janasz, 2018: 93). For the following systematic literature review (SLR), the authors shall use the latter definitions by McDonald & Rowsell-Jones (2012) and Janasz (2018: 92 ff.) as a basis since they describe digital technologies from the application perspective for companies as this is in the context of the purpose of this paper.

Conceptual Definition of a Do-It-Yourself Store. DIY-stores, or also called hardware-stores, home-centres or home-improvement-centres, sell assortments from the fields of DIY, building, living and gardening (BaumarktManager, 2016). Private households or companies can buy products from various ranges, such as household appliances, building materials, doors and windows, garden products, paint or installation material (SIS International Market Research, 2021) (Lowe's, 2022) (BaumarktManager, 2017). From the point of view of the BHB – Handelsverband Heimwerken, Bauen und Garten e.V. Industry definition, this definition is independent of the size of the sales area of the store (BaumarktManager, 2016).

Overview of the Do-It-Yourself Sector. DIY stores around the world turned over around 701 billion euros in 2020 (+13.8% compared to the previous year). One should note that the DIY industry has benefited from the fact that many people have had to stay at home due to the corona pandemic, redirecting disposable income. North America accounts for 61% of the world market with 612 billion euros. Consumers there spent the most on DIY products in 2020, averaging 1,163 euros per capita (+19.65%). Europe has a 27% share of the world market. Around 82.5% of the global DIY market (578.1 billion euros) is concentrated in just eight countries: the USA, Germany, Canada, Japan, Great Britain, France, Australia, and Italy. Germany, France and Great Britain account for around 50% of the European market (HIMA and EDRA-GHIN, 2021 cited from Herstellerverband Haus & Garten, E.V., 2021). Table 2 provides an overview of the leading home improvement stores worldwide in terms of net sales in 2020.

Table 2. Leading DIY Stores Worldwide in Terms of Net Sales in 2020

Company	Net Sales in 2020 (in million euros)
Home Depot (USA)	108,852
Lowe's (USA)	73,903
Groupe Adeo (France)	21,725
Kingfisher (UK)	15,483
Ace Hardware ¹ (USA)	11,007
Bunnings (Australia)	10,544
Menards (USA)	8,969
Tractor Supply (USA)	8,716
Obi (Germany)	7,395
Bauhaus ¹ (Germany)	6,236
Canadian Tire (Canada)	5,528

Source: Dähne Verlag, 2021, p. 78, cited from Statista GmbH, 2022

Research Methodology

To analyze which digital technologies are used within the DIY stores' POS and which advantages they provide, the methodology of this article follows a systematic literature review approach (Fink, 2010) (Okoli, 2015) (Kitchenham & Charters, 2007) (Webster & Watson, 2002) to contribute to research and practice, and also to identify areas of study that require further research. As literature reviews serve many different purposes, such as providing a basis for recommendations, proposing new theories or examining old ones (Petticrew & Roberts, 2006), it is essential to determine the definition basis of this paper in advance. As the basis for this SLR, the authors adapt Fink's (2010: 3) definition of a research literature review as "a systematic, explicit, and reproducible method for identifying, evaluating, and synthesizing the existing body of completed and recorded work produced by researchers" (Fink, 2010: 3). As there are recurring complaints that there is a large number of poor-quality literature reviews (Kraus et al., 2020) (Okoli, 2015) (Petticrew & Roberts, 2006), this article is based on much-cited literature review guides studied by the authors in advance to ensure high quality: A systematic literature review consists of three main phases: planning the review, conducting the review and reporting the review (Brereton et al., 2007) (Kitchenham, 2004) (Kitchenham et al., 2009) (Bacca et al., 2014), each of these phases can be subdivided into different stages (Brereton et al., 2007) (Kitchenham & Charters, 2007). Table 3 illustrates the three phases that form the basis of the SLR, including the associated steps, which are described in detail below.

Table 3. Systematic Literature Review Steps

Step	Phase	Task
1	Plan Review	Identify the purpose and intended goals
2		Specify Research Questions
3		Develop Review Protocol
4		Evaluate the Protocol
5		Train the Team
6	Conduct Review	Select bibliographic or article database
7		Choose search terms
8		Apply practical screening criteria (Screening for Inclusion)
9		Extract Data
10		Synthesize Data
11	Report Review	Write Review Report

Sources: Compiled by the authors and based on Fink, 2010, Okoli, 2015; Brereton et al., 2007; Kitchenham et al., 2009; Kitchenham, 2004; Kitchenham & Charters, 2007; Unterkalmsteiner et al., 2012; Webster & Watson, 2002

We identified the purpose of the review and its intended goals (Step 1, Fig. 1) (Okoli, 2015) within the paper's introduction. To ascertain that previous literature has not dealt with a similar topic, the authors searched EBSCO Discovery Service (integrates the following databases: Business Source Premier, EconLit, APA PsycArticles, PSYNDEX, Medline, CINAHL, Engineering Source, GreenFILE, Contents of the IEEE Xplore digital Library, the ACM Digital Library and SpringerLink) for similar published literature. In addition to specialist articles, which may only have dealt with a sub-discipline of our topic, we also checked whether there are systematic literature reviews in this area. In conducting this examination, we also considered that, according to Biolchini et al. (2005), various synonyms for the methodology of a systematic review must be included in the literature search. For this reason, we used the following additional search terms: "overview", "research review", "research synthesis", "research integration", "systematic overview", "systematic research synthesis", "integrative research review", and "integrative review". The search strings were limited to English language literature. Furthermore, only publications between 2010 and 2022 have been selected to ensure topicality. Since this preliminary research provided the result that previous literature had not dealt with a similar topic, we continued to pursue our goal and, as a result, the research questions (RQ) that the authors intend to answer were developed (Step 2, Fig. 1):

RQ1: Which digital technologies are used within the DIY-stores' POS?

RQ2: What advantages do these digital technologies offer to retailers and consumers?

To reduce research bias and to permit reproducibility of this review, a protocol was set in place (Step 3, Fig. 1) (Brereton et al., 2007) (Kitchenham & Charters, 2007) (Butler et al., 2016). The protocol ensured that all participating reviewers were in agreement and completely clear about the procedure for the review. After the protocol was finalized, it was evaluated by an independent expert experienced in publishing literature reviews (Step 4, Fig. 1). The final design for conducting the review was iteratively improved in this evaluation. On this basis, all reviewers have been trained to conduct the review in a consistent manner (Step 5, Fig. 1) (Okoli, 2015).

The paper's search strategy followed a structured approach to ascertain that it is not limited to a specific selection of scientific journals. Therefore, the following article databases were selected for an automatic search (Step 6, Fig. 1): EBSCO Discovery Service (integrates the following databases: Business Source Premier, EconLit, APA PsycArticles, PSYINDEX, Medline, CINAHL, Engineering Source, GreenFILE, and others Contents of the IEEE Xplore Digital Library, the ACM Digital Library and SpringerLink). The selection of these databases results from being considered the most relevant to the field of business and technology; the expansion to several different databases enabled through the use of EBSCO Discovery Service ensured broad coverage of publications (Webster & Watson, 2002). Based on the research question, the key terms for the paper searching were defined as follows (Step 7, Fig. 1): Publications were selected in which terms “digital technologies”, “digital technology” or “technolog*” and “Baumarkt”, “Baumärkte”, “DIY”, “do-it-yourself”, “hardware store”, “home centre”, “home center”, “home improvement center” or “home improvement centre” appeared in the title or “digital technologies” or “digital technology” and “Baumarkt”, “Baumärkte”, “DIY”, “do-it-yourself”, “hardware store”, “home centre”, “home center”, “home improvement center” or “home improvement centre” appeared within the abstract. The advanced search options were as follows: Limitation to available full texts; the period of publication of the articles was filtered to 2010 – 2022. The search was extended to full-text articles, and semantic concepts were utilized. The search mode was set to *find all my search terms*. The database research was limited to English-language and German-language articles. The search algorithm was:

TI (9) AND TI (“Baumarkt” OR “Baumärkte” OR “DIY” OR “do-it-yourself” OR “hardware store” OR “home centre” OR “home center” OR “home improvement center” OR “home improvement centre”) OR AB (“digital technologies” OR “digital technology”) AND AB (“Baumarkt” OR “Baumärkte” OR “DIY” OR “do-it-yourself” OR “hardware store” OR “home centre” OR “home center” OR “home improvement center” OR “home improvement centre”); custom range search mode: limitations: available full texts; release date: 20100101-20221231; extensions – search within full-text article; use semantic concepts; limitations by language: – english and german; search modes – search all my search terms.

This database search yielded 159 studies. After removing duplicates, 96 items remained. A manual search in scientific literature followed which supplemented the 96 studies with five further publications. These, in total, 117 articles resulting from the research made up the core of our structured, standalone systematic literature review. Within the course of a practical screening (Fink, 2010), the criteria for inclusion or exclusion of the searched studies from this systematic literature review were explicitly defined (Page et al., 2021) (Sterne et al., 2001). They were based on critical decisions by all authors and pragmatic considerations and defined which studies were read beyond the abstract (Okoli, 2015). Based on Fink (Fink, 2010: 55-56), the authors established the following criteria by which studies reasonably were excluded from consideration to limit the review's scope (Step 8, Fig. 1):

Content 1: The study's topic has no bearing on the specific RQ of this review (Dawson & Ferdig, 2006).

Content 2: The term “DIY” or “do-it-yourself” is not used in the context of the hardware store industry.

Publication language: The study is not written in English language.

Setting: The review only considered those studies conducted in the setting of the do-it-yourself sector.

Date of publication: The study was not published between 2013 and 2022.

After carrying out the practical screening (Fink, 2010), nine studies remained for further processing for the present systematic literature review (Page et al., 2021) (Sterne et al., 2001). Within the next step, the author's conducted the data extraction of the resulting nine papers from the research (Step 9, Fig. 1). In this context, the authors used information from these studies to receive the raw material for the data synthesis. The data extraction was conducted referring to the data extraction form used by Petticrew and Roberts (Petticrew & Roberts, 2006) (Okoli, 2015).

In the tenth step, the data synthesis (Step 10, Fig. 1), the resulting nine articles were evaluated based on Mayring's systematic and rule-based qualitative content analysis (Mayring, 1994: 164). The basic idea of this qualitative content analysis is to maintain the systematics of the classic quantitatively oriented content analysis and, thus, focus on the qualitative analysis steps in the text interpretation. In this way, premature quantifications could be avoided, but systematically evaluated, rule-based and quality criteria oriented, without blocking the way to quantitative statements. In this context, Mayring has defined three basic techniques of qualitative content analysis, which are based on the basic form of interpretation: summary, explication, and structuring. The authors of the work have opted for the basic technique of the “summary”, as

this technique aims to reduce the material in such a way that the essential content is preserved by creating unambiguous statements through abstraction (Mayring, 2010: 65) (Mayring, 1994: 159 ff.). The aim of a content analysis as a research technique, is to increase the reader's understanding of a certain phenomenon, provide new insights into a specific topic or to give practical recommendations for action (Krippendorff, 2004: 18).

Results and Discussion

One of the study's initial results is that the DIY industry is a relatively under-researched field in the retail sector. It is illustrated by the fact that our database search led to 159 results; in comparison, an identical search, in which we only replaced the term DIY and the associated synonyms with the term "fashion", produced 688 results. When the word "fashion" was replaced by the term "food", the number of results was even higher at 6347. It suggests that other retail sectors have been researched significantly further. In addition, we infer that the terms "DIY" and "do-it-yourself" are not consistently defined or used in consistent terms or frameworks as a large part of the 159 results that our database research delivered had to be removed because these search terms were not used in the context of the hardware store industry, but only had the meaning "to do something myself". For this reason, the systematic literature review helps to close an obvious research gap.

The aim of this study was to give an overview of which digital technologies can be used at the POS in the DIY industry and what competitive advantage they offer for retailers and consumers. This systematic literature review enables a high degree of reliability based on including the highest quality and most relevant articles in business and marketing literature. The article was based on two research questions: (RQ1) Which digital technologies are used within the DIY-stores' POS? (RQ2) What advantages are achieved by using these digital technologies by retailers and consumers? Table 4 summarizes the key findings of the systematic and rule-based qualitative content analysis that was carried out of the nine identified studies on the use of digital technologies at the DIY stores' POS. In addition, Table 5 clearly shows where the respective competitive advantages lie for retailers and consumers when using these digital technologies.

Table 4 shows that most of the articles identified had been published in the last four years (78%). It illustrates the topicality of this topic and the scientific interest. The key findings also show that the number of, and the opportunities resulting in using digital technologies, are enormous. It is listed explicitly and systematized in Table 5. The table assigns the identified digital technologies to the resulting competitive advantages for retailers on the one hand and consumers on the other. In general, the advantages that can result from the use of these technologies for retail can be summarized as follows: reducing costs, direct communication channel to the consumer, creating excitement, developing consumers into brand ambassadors, increasing brand awareness, increasing purchase intention, increasing social belonging, improving the level of service, and saving sales floor space. The advantages that can result from the use of these technologies for the consumer can be summarized as follows: Possibility of communication between craft and do-it-yourself (DIY) communities of practice (COPs) participants, product test possibility; enhancing the shopping experience, saving time, individualization, increasing convenience, and reducing prices or expenses. Table 5 shows that the competitive advantages achieved by using digital technologies may partially overlap on both sides: the retailer and the consumer. For example, the advantage of "reducing costs" is mentioned in several studies (studies 3, 4, 5, 7, 8, 9).

The study illustrates that using digital technologies of digital technologies at the POS in brick-and-mortar stores can generate significant competitive advantages in the DIY sector. It applies to both retailers and consumers. The study also reveals that there are many possibilities of digital technologies that retailers can use and that it should be exactly verified which digital technologies lead to which competitive advantages. One should note that the number of digital technologies used is not decisive but rather a well-verified, quality-promising and purposeful selection.

Table 4. Overview of the Key Findings

Study	Year	Reference	Article	Key findings
1	2014	Holmes et al., 2014	Creating communities: the use of technology in craft and DIY communities of practice	Use of digital technologies to provide ways for craft and do-it-yourself (DIY) communities of practice (COPs) participants to connect, share and create.
2	2015	Hatton-Jones & Teah, 2015	Case analysis of the do-it-yourself industry	IKEA and Airbnb together promoted, via a digital platform: the aim of the campaign was to inform consumers about the new range of bedroom furniture and accessories in an original way. Consumers could book an overnight stay in the furniture store to "experience" the furniture. This drew worldwide attention. The success was that the retailer knew how to communicate with a technology-oriented audience, attracting attention and using the appropriate medium. By allowing consumers to "experience IKEA", they increased the likelihood that consumers would become brand advocates and increased overall brand awareness, as well as increasing purchase intent and social belonging through word of mouth.
3	2019	Hanson, 2019	The Next Level of Do-It-Yourself New advances in technology deliver higher quality with the labor savings of self-service	Technologically advanced machines, capable of customizing high quality products at high speed by using touch screen technology.
4	2019	Heinemann, 2019	Do it yourself! An analysis of the business opportunity of self-service technologies in the German retail industry	Implementation of self-service technologies: websites, online shops, package tracking services, self-checkout stations, comparison portals, e-commerce marketplaces, support sites, automated hotlines, information kiosks, chat bots and click & collect stations. Consumers expect the following benefits: time saving, convenience, cheaper prices, and digital receipts. The advantages for retailers are improved service and reduced costs.
5	2020	Kim, 2020	Moving Forward with Digital Disruption: What Big Data, IoT, Synthetic Biology, AI, Blockchain, and Platform Businesses Mean to Libraries	"Just Walk Out Technology" enables consumers to simply take goods they want to buy in a brick-and-mortar store with them. When leaving the store, the goods are automatically charged to the credit card. For buyers, there are the advantages of time savings and the fact that no additional means of payment have to be carried apart from the appropriate app on a smartphone. There are advantages for the retailer due to savings in personnel costs and space.
6	2020	Chylinski et al., 2020	Augmented reality marketing: A technology-enabled approach to situated consumer experience	Lowe's HoloRoom allows consumers to design their bathroom or kitchen in real size and change the shape, colour or content of their designed room in real-time.
7	2021	Marr, 2021: 53	Extended Reality in Practice 100+ Amazing Ways Virtual, Augmented and Mixed Reality Are Changing Business and Society	Lowe's Envisioned app allows consumers to overlay 3D images of Lowe's products into their homes. The app scans the consumer's surroundings so that virtual objects can be inserted at real size and dragged to any position.
8	2021	Turban et al., 2021: 406	Information Technology for Management Driving Digital Transformation to Increase Local and Global Performance, Growth and Sustainability	Lowe's LoweBot – a 5' tall robotic shopping assistant understands and speaks seven languages, detects the consumer by entering the store through a 3D scanner; LoweBot asks consumers what they're looking for, leads them to the requested items, and displays smart recommendations and location-based specials offers on its rear-facing display panel. It also scans shelves and sends updated stock information back to store associates as it travels through the store.
9	2021	Bercher et al., 2021	Do It Yourself, but Not Alone: Companion-Technology for Home Improvement—Bringing a Planning-Based Interactive DIY Assistant to Life	Assistance systems that support do-it-yourselfers in do-it-yourself projects. The system generates instructions for users to follow. The assistant offers explanation possibilities and/or proactive support, based on the communication with the user as well as with tools that might be needed.

Source: Compiled by the authors

Table 5. Systematization of Possible Achieved Competitive Advantages Using Digital Technologies from a Retail and Consumer Perspective

Study	Reference	Digital technology	Competitive advantage for retail	Competitive advantage for consumer
1	Holmes et al., 2014	Communication technology	Direct communication channel to the consumer	Possibility of communication between craft and do-it-yourself (DIY) communities of practice (COPs) participants
2	Hatton-Jones & Teah, 2015	Digital platform	Direct communication channel to the consumer, creating excitement, developing consumers into brand ambassadors, increasing brand awareness, increasing purchase intention, increasing social belonging	Product test possibility; enhancing the shopping experience
3	Hanson, 2019	Technologically advanced machines	Reducing costs	Enhancing the shopping experience, saving time, individualization
4	Heinemann, 2019	Self-service-technologies	Reducing costs, improving the level of service	Enhancing the shopping experience, saving time, reducing prices or expenses
5	Kim, 2020	Just Walk Out Technology	Reducing costs, saving sales floor space	Saving time, increasing convenience
6	Chylinski et al., 2020	Augmented reality	Direct communication channel to the consumer, creating excitement, developing consumers into brand ambassadors, increasing brand awareness, increasing purchase intention, increasing social belonging, improving the level of service	Enhancing the shopping experience, saving time, individualization
7	Marr, 2021: 53	Mobile application	Reducing costs, direct communication channel to the consumer, creating excitement, developing consumers into brand ambassadors, increasing brand awareness, increasing purchase intention, increasing social belonging	Enhancing the shopping experience, saving time, individualization
8	Turban et al., 2021: 406	Robotic shopping assistant	Reducing costs, direct communication channel to the consumer, creating excitement, developing consumers into brand ambassadors, increasing brand awareness, increasing purchase intention, increasing social belonging, improving the level of service	Enhancing the shopping experience, saving time, individualization
9	Bercher et al., 2021	Mobile application	Reducing costs, direct communication channel to the consumer, creating excitement, developing consumers into brand ambassadors, increasing brand awareness, increasing purchase intention, increasing social belonging, improving the level of service	Saving time, individualization

Source: Compiled by the authors

Limitations & Implications for Further Research

Despite the analytical approach and the strictly structured, protocol-based implementation, this article also has limitations. The following limitations should therefore be addressed and, if necessary, used for further research (Mock et al., 2021: 85). The first limitation of this SLR is that our literature review is not exhaustive. It frequently results in new research appearing due to the high dynamics underlying the topic of digital technologies. Secondly, not all of the studies listed have been conducted in a direct context of the DIY industry. In the course of the “Screening for Inclusion” (Step 8, Fig. 1), the authors included four studies in this systematic literature review since they have a very close relationship with DIY, but these studies are not directly related to the classical do-it-yourself industry. Thirdly, the focus on papers and the scientific literature limits the number of studies covered in this literature review as use cases that have not yet been published in the scientific literature are not considered.

Conclusion and Outlook

The added value that this paper delivers lies in the fact that it examines successful, innovative, and creative use cases of digital technologies for the DIY-stores’ POS. It provides a systematic overview of which digital technologies are used within the brick-and-mortar stores’ POS in the DIY sector and what advantages they provide for the DIY-retailer and consumers. Thus, the paper contributes to practitioners or consultants as it presents practical solutions that can be used in the do-it-yourself industry. Some of the digital technologies

presented have been implemented in DIY-related industries. Due to the reason that they have a high level of DIY practicability, they have been included in the present systematic literature research. The systematic literature review shows how the development of digital technologies is progressing and how complex the topic is: companies are faced with the task of identifying, evaluating, and finally selecting the digital technologies they need so that the greatest possible benefit is generated. The challenge is that the possibilities are enormous and digital technologies are available in an incomprehensible variety and diversity. However, no question, doing nothing is not an option, as it is clear that if DIY retailers do not use digital technologies at the POS, their very future will be threatened. For this reason, it is recommended that DIY retailers not avoid these challenges but embrace and deal with them. Great competitive advantages can be achieved through digital technologies, but this requires an intensive and ongoing examination. Above all, it requires discipline since digital technologies' constant and rapidly advancing development must be followed almost daily to avoid the danger of being left behind by competitors.

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