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Timo Phillip Böttcher

Technische Universität München

Lukas Rickling

Technische Universität München

Kristina Gmelch

Technische Universität München

Jörg Weking

Technische Universität München

Helmut Krcmar

Technische Universität München

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Towards the Digital Self-Renewal of Retail: The Generic Ecosystem of the Retail Industry

Timo Phillip Böttcher¹, Lukas Rickling¹, Kristina Gmelch¹, Jörg Weking¹ and Helmut Krcmar¹

¹ Technical University of Munich, Chair for Information Systems and Business Process Management, Garching, Germany
{timo.boettcher, lukas.rickling, kristina.gmelch, joerg.weking, helm
ut.krcmar}@tum.de

Abstract. E-commerce, digital platforms, and digital transformation (DT) pose major challenges to offline businesses in the retail industry. To offset the benefits of the data available to online businesses, stores must digitalize their stores and rethink their value proposition to customers. In a digitalized world, this value is no longer provided by single companies—leveraging a set of companies in the retail ecosystem to jointly create value is now necessary. Therefore, this research project provides an overview of the roles and value flows in Germany’s retail industry in the form of an e³-value model that can be used by scholars for future research on the digitalization of the retail industry. For practitioners, it provides guidance for forging new partnerships to co-create value in interconnected, digital ecosystems.

Keywords: Retail, ecosystem, business model, digital transformation.

1 Introduction

“You left something in your shopping cart. Check out now and receive a 10% discount on your order!” Most online shoppers have received similar e-mails after adding something to their cart that they ultimately did not purchase. Even if a shopper does not purchase the item, Google, Facebook, and other online platforms will nonetheless continue advertising similar products to them. The great advantage of doing business online is that such platforms know each individual (potential) customer. They know their interests, past purchases, or, at a minimum, their e-mail address, physical address, age, and gender. Sometimes, they know us so intimately, we might assume these platforms must be surveilling our conversations. Therefore, if your business’s point-of-sale is a brick-and-mortar store, you face a major competitive disadvantage.

Driven by recent digital transformation (DT) and changed customer behavior [1], online retailers are currently growing much faster than their store-based counterparts (9.5% compared to 1.5% in 2018 in Germany) [2]. Therefore, the industry is making an effort to close the gap between brick-and-mortar and online stores. For example, Hummel successfully employed an omni-channel sales strategy to connect all relevant

players in their retail ecosystem and provide a seamless customer journey both online and offline [3-5]. In their stores, Nike now uses augmented reality to market personalized shoes and encourages customers to use its mobile app to buy outfits by scanning a code on the price tag. Such efforts aim to provide a digital experience to customers even when shopping in brick-and-mortar stores, thereby enabling an online connection to be established through which they can collect invaluable information.

To be successful in these approaches to digitalizing the store-based retail industry, retailers need to rethink their value strategies. In today's complex and highly interconnected world, value is no longer created by linear value chains or by individual companies [6-8]. Today, as digital platforms like Amazon demonstrate, integrating and leveraging a value network in which multiple companies collaborate to create value for the customer is key to retail success [9-11]. Strategy and information systems (IS) research has termed these networks "*ecosystems*," analogous to nature [7, 12, 13]. In this paper, we define an ecosystem according to the definition by Jacobides, Cennamo and Gawer [14] as a "*set of actors with varying degrees of multilateral, nongeneric complementarities that are not fully hierarchically controlled*" (p. 2264).

Leveraging synergies between actors is imperative for innovating value creation mechanisms. Applying the concept of value paths [15], innovating established connections between companies by leveraging digital resources can be useful in assessing value creation opportunities [16]. Facilitated by digital resources, companies are today able to innovate beyond their integrated supply chain and exploit opportunities through nonhierarchical cooperation with interdependent actors [17]. To leverage this form of complementary cooperation, companies need to recognize the set of actors contributing to their value proposition and creation, the roles these actors fulfill and which values are exchanged between these roles [14, 18, 19]. Therefore, this research applies an ecosystem perspective to Germany's retail industry. We state two research questions: (1) *Which generic roles and value exchanges exist in the German retail ecosystem?* And (2) *How does the German retail ecosystem look like?*

To support practitioners and researchers regarding the DT of retail, this study proposes a model of the retail industry's generic ecosystem. We contribute to IS research by providing an overview of the DT of the retail industry that can be used by scholars for future research. For practitioners, it provides guidance for forging new partnerships to co-create value through interconnected, digital ecosystems.

2 Theoretical Background

Research on the digital transformation in retail has started early with the rise of e-business [20] and consequential e-commerce [21-23]. More recently there is growing interest in business model innovations and the role of digital platforms for retail. The business model of digital platforms has severe implications for the retail industry. They simplify the complex value chain by directly linking customers and producers [7, 13, 24]. The marketplace, e. g. Amazon, is a typical example of such a digital platform that serves as an intermediary and captures value by charging transaction fees – in this case to the seller – or/and by charging for advertising [25]. Rather than simply moving

transactions online, digital platforms and e-commerce businesses leverage data analytics to create value from vastly collected data about transactions and consumer behaviors to offer personalized recommendations, competitive prices, and fast delivery to offer a more appealing customer experience [26-29]. Even if the value proposition of department stores is unlikely to be competitive compared to digital platforms, physical presence for specialized brick-and-mortar retail permits physical engagement with products, detailed information, and personal counseling which positively influences customer experience [30]. Augmenting the physical presence with digital technology like tablets, virtual experiences, and combining offline and online channels positively influence sales and customer relations [4, 31-33]. As the ubiquity of digital technology enables consumers to make better-informed decisions [34] and shopping experience in online shops alters expectations for physical shops, consumers transition between the channels easily [31].

Hence, instead of strictly separating e-commerce and physical stores, retailers should emphasize the potentials of interaction between them [35]. Since this applies for both online and offline retailers, research and practice face open questions about revenue generation in physical stores that mainly serve as point of experience rather than point of sale, how do consumers interact with digitally connected sales channels, or how do value propositions change, when the whole retail ecosystem becomes omni-channel [30, 36]. The subsequent challenges require fundamental changes in the organizations, but also in the entire ecosystem. Hence research suggests to openly and actively manage the shifting relationships in the ecosystem [4]. Beyond that, research is asked to regard digitalization in retail not from an *online or offline* perspective, but taking an integrated perspective to analyze how transformations happen and how these impact the entire retail industry [35].

3 Research Approach

To formulate a generic ecosystem model of the retail industry, we follow a three-step research approach based on Riasanow, Galic and Böhm [37]. For this initial research, we focused on the German retail industry. This way, we aimed to consider differences in customer behavior (e.g., willingness to share data), legal regulations (e.g., data privacy), and market-specific structures (e.g., shopping streets vs. shopping malls). In the first step, we identified the roles and value streams of the ecosystem based on data extracted from Crunchbase (crunchbase.com) on June 9, 2020. The Crunchbase database contains information about existing companies and start-ups, e.g., their value proposition, size, funding rounds, and headquarters location. To delimit the German retail ecosystem, we searched for companies assigned to the industry classifiers “retail” and “retail technology” with headquarters in Germany. The search resulted in an initial sample of 543 German companies. After reviewing all of the companies, we eliminated 83 defunct companies, e. g. the clothing accessories manufacturer VON FLOERKE that filed for insolvency in October 2019. Also, we removed 65 companies not primarily operating in retail, e. g. the telecommunications company Deutsche Telekom. In this sense, the above-mentioned regulatory actors that influence value creation are

also not considered, as this study focuses on the digital transformation patterns within the retail industry and the ways in which this value is created, not on its contingency factors. Finally, we analyzed a sample of 395 relevant organizations. Based on this dataset, we conducted a structured content analysis, including inductive category development [38, 39]. Two coders independently coded the sample and identified the 13 distinct roles through constant discussion. The same coders identified the value streams between these roles by combining the Crunchbase data with other publicly available information from company websites and news reports.

In the second step, we visualized the ecosystem, including all identified generic roles and value streams. We selected the e³-value method for this purpose. We deem this suitable as the e³-value method aims to elicit, evaluate and identify value creation in ecosystems. It is used to evaluate the economic sustainability of ecosystems by modeling the economic value exchanges of actors [40]. Thereby we built upon the work of [37, 40-42], allowing for inter-ecosystem comparison in later research stages. In the third step, we will validate our findings using insights from interviews with various retail industry experts and managers regarding our proposed generic ecosystem.

4 Preliminary Results

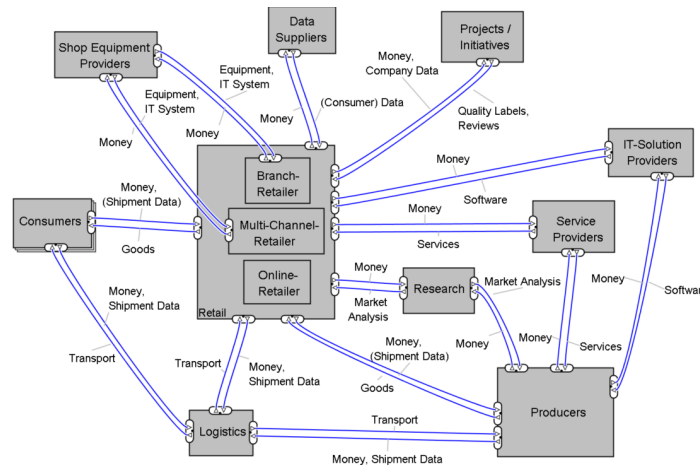
Table 1: Roles in the Retail Ecosystem

Role	Description	Examples	
Retail	Online Retailer	Retailer with online point-of-sale	Otto
	Branch Retailer	Brick-and-mortar retailer with different branches	Kaufland
	Multi-channel Retailer	Brick-and-mortar retailer with additional online retail channels	Tchibo
Information Technology Solution Provider	Company providing software systems to retailers or producers	aifora	
Service Provider	External service provider offering outsourcing possibilities	Ströer Media	
Project / Initiative	Project / Initiative supporting retail	Trusted Shops	
Store Equipment Provider	Company providing in-store fixtures or equipment	Locafox	
Producer	Company producing goods, selling to end-customers, or retail	Hugo Boss	
Data Supplier	Company providing consumer information	Loyalty Partner	
Research	Market research institute	GfK	
Logistics	Company transporting goods	Kühne + Nagel	
Consumer	Consumers purchase goods, paying with money, data, or both	-	

The analysis of the dataset of companies derived from Crunchbase yielded 13 different roles constituting the German retail ecosystem. The identified roles and their corresponding descriptions and examples are listed in Table 1 above. To create a generic ecosystem applicable to all actors involved, we provisionally did not

differentiate between business models (BMs) but instead subdivided the *Retail* market segment into three different actors based on their point-of-sale influencing connections with other actors. The value exchange between all actors is characterized by interchanging goods and services for money and data. Combining all analyzed elements, Figure 1 depicts the e³-value model of Germany's retail ecosystem.

Figure 1. e³-Value Model of the Retail Ecosystem



5 Contributions and Future Research

This short paper applies an ecosystem perspective to Germany's retail industry. To support practitioners and researchers regarding the DT of retail, this study proposes a model for the retail industry's generic ecosystem. When fully developed and validated by experts, this research will contribute to IS research by providing an overview of the avenues available for digitally transforming store-based retail BMs. It contextualizes existing ecosystem research to the retail industry. The model can then be used by scholars for future research, e. g. as a starting-point for in-depth case studies. For practitioners, it supplies initial guidance for forging new partnerships to co-create value in interconnected, digital ecosystems. However, future research is necessary to clearly outline the strategic potentials of value co-creation in the retail ecosystem.

In the next steps, we will enhance our ecosystem model by increasing our dataset and by focusing on BMs that influence omni-channel retailing. We will complete the third step of our methodology by validating the proposed ecosystem with industry experts. Thereby, we will draw from [42], to deeply investigate the value creation process in retail and its implications for the several actors involved and address the limitation of the high level of analysis of e³-modelling. We aim to propose a model that is useful for both research and practice. Based on our theoretical considerations of the ecosystem perspective's value to retail and identified value exchange, we furthermore seek to contribute strategic implications for the actors involved. Thereby, we consider previous research by [41] and [43] to identify and analyze linkages to other ecosystems.

References

1. Lucas, H., Agarwal, R., Clemons, E., Sawy, O., Weber, B.: Impactful Research on Transformational Information Technology: An Opportunity to Inform New Audiences. *MIS Quarterly* 37, 371-382 (2013)
2. Kolf, F.: Der Einzelhandel droht 2019 zum Opfer der Digitalisierung zu werden. *Handelsblatt*. Handelsblatt GmbH, Düsseldorf (2019)
3. Lemon, K.N., Verhoef, P.C.: Understanding Customer Experience Throughout the Customer Journey. *Journal of Marketing* 80, 69-96 (2016)
4. Hansen, R., Sia, S.: Hummel's Digital Transformation Toward Omnichannel Retailing: Key Lessons Learned. *MIS Quarterly Executive* 14, 51-66 (2015)
5. Böttcher, T., Weking, J.: Identifying Antecedents & Outcomes of Digital Business Model Innovation. 28th European Conference on Information Systems, Marrakesh (2020)
6. Benbya, H., Nan, N., Tanriverdi, H., Yoo, Y.: Complexity and Information Systems Research in the Emerging Digital World. *MIS Quarterly* (2020)
7. Hein, A., Schreieck, M., Riasanow, T., Setzke, D.S., Wiesche, M., Böhm, M., Krcmar, H.: Digital platform ecosystems. *Electronic Markets* (2019)
8. Hein, A., Weking, J., Schreieck, M., Wiesche, M., Böhm, M., Krcmar, H.: Value co-creation practices in business-to-business platform ecosystems. *Electronic Markets* 29, 503-518 (2019)
9. Ganco, M., Kapoor, R., Lee, G.: From Rugged Landscapes to Rugged Ecosystems: Structure of Interdependencies and Firms' Innovative Search. *Academy of Management Review* 45, 646-674 (2019)
10. Linden, G., Kraemer, K.L., Dedrick, J.: Who Captures Value in a Global Innovation Network? The Case of Apple's iPod. *Communications of the ACM* 52, 140-144 (2009)
11. Hein, A., Böhm, M., Krcmar, H.: Tight and Loose Coupling in Evolving Platform Ecosystems: The Cases of Airbnb and Uber. In: *International Conference on Business Information Systems*, pp. 295-306. Springer International Publishing, (Year)
12. Bogers, M., Sims, J., West, J.: What Is an Ecosystem? Incorporating 25 Years of Ecosystem Research. *Academy of Management Proceedings* 2019, 11080 (2019)
13. Moore, J.: Predators and Prey: A New Ecology of Competition. *Harv. Bus. Rev.* 71, 75-86 (1993)
14. Jacobides, M.G., Cennamo, C., Gawer, A.: Towards a Theory of Ecosystems. *Strategic Management Journal* 39, 2255-2276 (2018)
15. Henfridsson, O., Nandhakumar, J., Scarbrough, H., Panourgias, N.: Recombination in the Open-ended Value Landscape of Digital Innovation. *Information and Organization* 28, 89-100 (2018)
16. Nambisan, S.: Architecture vs. Ecosystem Perspectives: Reflections on Digital Innovation. *Information and Organization* 28, 104-106 (2018)

17. Enkel, E., Bogers, M., Chesbrough, H.: Exploring Open Innovation in the Digital Age: A Maturity Model and Future Research Directions. *R&D Management* 50, 161-168 (2020)
18. Shipilov, A., Gawer, A.: Integrating Research on Inter-Organizational Networks and Ecosystems. *Acad. Manag. Ann.* 14, 92-121 (2019)
19. Kapoor, R.: Ecosystems: Broadening the Locus of Value Creation. *Journal of Organization Design* 7, 12 (2018)
20. Amit, R., Zott, C.: Value Creation in E-Business. *Strategic Management Journal* 22, 493-520 (2001)
21. Barua, A., Konana, P., Whinston, A.B., Yin, F.: An Empirical Investigation of Net-Enabled Business Value. *MIS Quarterly* 28, 585-620 (2004)
22. Brynjolfsson, E., Hu, Y., Smith, M.D.: Consumer Surplus in the Digital Economy: Estimating the Value of Increased Product Variety at Online Booksellers. *Manage. Sci.* 49, 1580-1596 (2003)
23. Zott, C., Amit, R., Donlevy, J.: Strategies for Value Creation in E-Commerce. *European Management Journal* 18, 463-475 (2000)
24. Hänninen, M., Smedlund, A., Mitronen, L.: Digitalization in Retailing: Multi-Sided Platforms as Drivers of Industry Transformation. *Baltic Journal of Management* 13, 152-168 (2018)
25. Cusumano, M.A., Yoffie, D.B., Gawer, A.: The Future of Platforms. *MIT Sloan Management Review* (2020)
26. Iansiti, M., Lakhani, K.R.: From Disruption to Collision: The New Competitive Dynamics. *MIT Sloan Management Review* 61, 34-39 (2020)
27. Bradlow, E.T., Gangwar, M., Kopalle, P., Voleti, S.: The Role of Big Data and Predictive Analytics in Retailing. *J. Retail.* 93, 79-95 (2017)
28. Fichman, R.G., Dos Santos, B.L., Zheng, Z.: Digital Innovation as a Fundamental and Powerful Concept in the Information Systems Curriculum. *MIS Quarterly* 38, 329-A315 (2014)
29. Weber, M., Kowalkiewicz, M., Weking, J., Böhm, M., Krcmar, H.: When Algorithms Go Shopping: Analyzing Business Models for Highly Autonomous Consumer Buying Agents. 15th International Conference on Wirtschaftsinformatik, Potsdam, Germany (2020)
30. Reinartz, W., Wiegand, N., Imschloss, M.: The Impact of Digital Transformation on the Retailing Value Chain. *International Journal of Research in Marketing* 36, 350-366 (2019)
31. Blom, A., Lange, F., Hess Jr, R.L.: Omnichannel-based Promotions' Effects on Purchase Behavior and Brand Image. *Journal of Retailing and Consumer Services* 39, 286-295 (2017)
32. Fuentes, C., Bäckström, K., Svingstedt, A.: Smartphones and the Reconfiguration of Retailscapes: Stores, Shopping, and Digitalization. *Journal of Retailing and Consumer Services* 39, 270-278 (2017)
33. Hernant, M., Rosengren, S.: Now What? Evaluating the Sales Effects of Introducing an Online Store. *Journal of Retailing and Consumer Services* 39, 305-313 (2017)

34. Grewal, D., Roggeveen, A.L., Sisodia, R., Nordfält, J.: Enhancing Customer Engagement Through Consciousness. *J. Retail.* 93, 55-64 (2017)
35. Hagberg, J., Sundström, M., Nicklas, E.-Z.: The Digitalization of Retailing: An Exploratory Framework. *International Journal of Retail & Distribution Management* 44, 694-712 (2016)
36. Hagberg, J., Jonsson, A., Egels-Zandén, N.: Retail Digitalization: Implications for Physical Stores. *Journal of Retailing and Consumer Services* 39, 264-269 (2017)
37. Riasanow, T., Galic, G., Böhm, M.: Digital Transformation in the Automotive Industry: Towards a Generic Value Network. 25th European Conference on Information Systems (ECIS), Guimaraes, Portugal (2017)
38. Miles, M.B., Huberman, A.M.: *Qualitative Data Analysis: An Expanded Sourcebook*. Sage Publications, Inc, Thousand Oaks, CA, US (1994)
39. Mayring, P.: *Qualitative Inhaltsanalyse*. VS Verlag für Sozialwissenschaften, Wiesbaden, Germany (2010)
40. Gordijn, J., Akkermans, H.: Value-based Requirements Engineering: Exploring Innovative E-Commerce Idea. *Requirements Engineering* 8, 114-134 (2003)
41. Riasanow, T., Jäntgen, L., Hermes, S., Böhm, M., Krcmar, H.: Core, Intertwined, and Ecosystem-specific Clusters in Platform Ecosystems: Analyzing Similarities in the Digital Transformation of the Automotive, Blockchain, Financial, Insurance and IIoT Industry. *Electronic Markets* (2020)
42. Hermes, S., Riasanow, T., Clemons, E.K., Böhm, M., Krcmar, H.: The Digital Transformation of the Healthcare Industry: Exploring the Rise of Emerging Platform Ecosystems and their Influence on the Role of Patients. *Business Research* (2020)
43. Schulz, T., Gewalt, H., Böhm, M., Krcmar, H.: Smart Mobility: Contradictions in Value Co-Creation. *Information Systems Frontiers* (2020)