

CONTINUOUS BUSINESS MODEL INNOVATION AND DYNAMIC CAPABILITIES: THE CASE OF CEWE

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Continuously innovating business models is necessary to leverage technological progress but remains a complex challenge for firms. Dynamic capabilities explain how organisations ensure long-term success by continuously transforming. Still, how continuous business model innovation unfolds and how dynamic capabilities might support remains understudied. Therefore, we use a 27-year old longitudinal case study of CEWE. CEWE transformed from an analog B2B2C business to a digital B2C and B2B brand in the photo industry. We derive a process model on continuous business model innovation, which explains how modular business model innovation builds dynamic capabilities and how architectural business model innovation utilises them. We enrich business model innovation and dynamic capabilities research by demonstrating how both enable and build on each other. For practice, we show explicit dynamic capabilities and routines to manifest them that guide firms to successfully navigate their business model innovation journey.

Keywords: Business model innovation; dynamic capability; longitudinal case study; process model.

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Introduction

To cope with an increasing pace of market dynamics, a rising complexity of customer demands, and an increasing speed of technological innovation, companies have to continuously adapt and innovate their business model (BM) (de Reuver *et al.*, 2013; El Sawy and Pereira, 2013; Ferreira *et al.*, 2013; Massa and Tucci, 2014; Reim *et al.*, 2018; Teece, 2017). Business model innovation (BMI) can lead to a competitive advantage and positively affects performance (Chesbrough, 2010; Clauß *et al.*, 2019; Demil and Lecocq, 2010; Foss and Saebi, 2017; Tavassoli and Bengtsson, 2018; Wirtz *et al.*, 2015). With continuously changing markets and technology, innovating a BM once is insufficient (Chesbrough, 2010). Companies need to continuously innovate their BMs to achieve and maintain a sustainable competitive advantage (Achtenhagen *et al.*, 2013; Casadesus-Masanell and Ricart, 2010; Kraus *et al.*, 2017).

Technological progress adds pressure on this need for continuous BMI by periodically enabling “truly new business models” (Teece, 2018): Digital photography disrupted existing BMs of firms such as Kodak and Fuji (Koen *et al.*, 2011; Komori, 2015; Lucas Jr. and Goh, 2009). The internet, as another example, led to a disruption of BMs by online companies (Cozzolino *et al.*, 2018; Teece, 2018; Wirtz *et al.*, 2010). Spoiled by the success of the internet, more and more firms built platform-based BMs, effectively outcompeting traditional companies (Baden-Fuller and Haefliger, 2013; Parker *et al.*, 2016; Rochet and Tirole, 2006). The notion of multi-sided markets (Rochet and Tirole, 2006) led to the immense success of platform-based BMs. Whereas technological progress can facilitate the development of new BMs (Baden-Fuller and Haefliger, 2013) technology itself has no inherent value (Chesbrough, 2007) but needs to be embedded into BMs to realise its potential (Zott *et al.*, 2011). To exploit such potentials, managers need to understand how they can incorporate technology into their BMs (Fichman *et al.*, 2014; Rai and Tang, 2014; Veit *et al.*, 2014).

However, firms struggle with continuously innovating their BM, as innovating a BM once is already challenging (Johnson *et al.*, 2008; Sosna *et al.*, 2010), and many fail to do so (Christensen *et al.*, 2016). If organisations fail to innovate their BMs repeatedly, they can lose their competitive advantage. Kodak, for example, performed various innovations over decades that put them at the top of the photo industry. Yet, they have not delivered suitable and continuous innovation of their BMs in the digital age, resulting in bankruptcy (Gassmann *et al.*, 2014; Lucas Jr. and Goh, 2009). Managers need to understand the bigger picture of this continuous process of BMI and grasp the effect of time to not lose their competitive advantage, as was the case for Kodak.

Research explains how organisations maintain profitability over an extended period with the help of the dynamic capabilities framework (Castiaux, 2012; Fischer *et al.*, 2010; Randhawa *et al.*, 2020; Teece *et al.*, 1997; Teece, 2007). Firms' BM choices depend, among others, on their dynamic capabilities (Teece *et al.*, 2016; Teece, 2017). Firms with stronger dynamic capabilities have more freedom to build "radical BMs" and are more effective in implementing BMs (Teece, 2017). Hence, to realise continuous BMI, firms require dynamic capabilities (Randhawa *et al.*, 2020). Dynamic capabilities offer a suitable framework to study the phenomena further (Foss and Saebi, 2017).

Although research on BMI and dynamic capabilities provides a solid basis, the problem of firms failing at continuous BMI remains puzzling. We identify, in particular, three research gaps: (1) Existing research provides generic insights on building dynamic capabilities (Teece, 2007), but fails to provide concrete routines on how organisations can develop and utilise specific dynamic capabilities in the context of BMI. Additionally, prior research shows dynamic capabilities lead to the long-term profitability of an organisation (Teece, 2017), but lacks a detailed understanding of which outcomes can be achieved by utilising dynamic capabilities within BMI.

Further, existing research elaborates on an existing interrelation of dynamic capabilities and BMI (Chesbrough, 2010; Foss and Saebi, 2017; Teece, 2017), but (2) the role of dynamic capabilities in the actual process of continuous BMI remains vague (Teece, 2017). It remains understudied how exactly dynamic capabilities are utilised to foster a continuous process of BMI (Foss and Saebi, 2017; Randhawa *et al.*, 2020; Ricciardi *et al.*, 2016) and what role BMI takes in building and reconfiguring capabilities (Chesbrough, 2010).

Lastly, while research has shown that BMI is essential for organisations, especially with technological progress, and enables them to maintain a competitive advantage, it (3) is unclear how organisations continuously innovate their BM and which activities account for its success. Scholars studied the antecedents and pre-conditions of BMI, but have difficulties explaining in detail how continuous BMI unfolds over time (Chesbrough *et al.*, 2018; Foss and Saebi, 2017; Sjödin *et al.*, 2020). Research on BMI needs to study antecedents *and* outcomes of continuous BMI and how sequential BMIs influence each other (Chesbrough, 2010; Foss and Saebi, 2017; Randhawa *et al.*, 2020).

Addressing these gaps, we focus on the following research question: *How does the process of continuous business model innovation unfold and what is the role of dynamic capabilities within that process?*

Tackling this question, we conduct a longitudinal single-case study of a prominent player in the European photo industry, CEWE, based on a period of 27 years.

Unlike its failing competitors, such as Kodak, CEWE has survived and continues to thrive in a challenging industry, albeit transformed. CEWE continuously innovated its BMs and has become a multi-brand and market-leading organisation. Using publicly available data, internal data, and interviews, we analyse the innovation of its BMs over 27 years (1994–2020). We uncover a process of how CEWE develops and utilises dynamic capabilities with modular BMI and leverages these capabilities in architectural BMI. We present a process model to explain continuous BMI, incorporating dynamic capabilities. Further, we highlight explicit dynamic capabilities that led to the overall success of the process for our case company, and show routines that support in building and maintaining these capabilities.

We contribute to research on dynamic capabilities, detailing its role as an antecedent to and outcome of BMI. For research on BMI, we provide a process model, specifying in detail how continuous BMI unfolds. For practice, we show how organisations can successfully navigate their journey of continuous BMI and showcase explicit dynamic capabilities that can help the success of this process.

Related Work

Dynamic Capabilities

One concept able to explain organisational actions on strategy, BM, and product-level, is dynamic capabilities. Dynamic capabilities employ a process approach instead of the resource-based view, which uses a rather static stance to explain organisational actions and success based on available resources (Eisenhardt and Martin, 2000). So, while the resource-based view emphasises resource choice, dynamic capabilities emphasise the development, reconfiguration, and renewal of resources to explain an organisation's (further) development (Noman and Basiruddin, 2021).

Organisational capabilities, in general, describe resources used to produce an outcome and are either inherent in individuals or arise from learning, a combination of organisational assets, and acquisitions (Teece, 2016). One can differentiate between ordinary capabilities, which focus on operational and efficiency issues to meet current objectives, and dynamic capabilities. Teece (2016) highlights the difference: "*ordinary capabilities are about doing things right, dynamic capabilities are about doing the right things, at the right time*". Dynamic capabilities refer to a firm's ability to integrate, build, and reconfigure internal competencies to address changes in the business environment (Kump *et al.*, 2018; Teece *et al.*, 1997; Teece, 2007; Tidd *et al.*, 2006). For the remainder of the paper, we will focus on dynamic capabilities.

The dynamic capabilities framework differentiates between microfoundations and high-order capabilities. Microfoundations refer to the use and recombination of existing ordinary capabilities and the development of new ones, e.g., new

product development and, in general, actions that support decision-making under uncertainty (Teece, 2017). High-order capabilities, in turn, refer to capabilities that enable the management to *sense* external developments, e.g., the future use of digital technology (Costa Climent and Haftor, 2021), and to *seize* opportunities by adapting organisational structures and BMs. Further, *transform* refers to a periodic transformation of aspects of an organisation and its culture to address newer opportunities and threats (Teece, 2016; Teece, 2017). When referring to dynamic capabilities, we include microfoundations and high-order capabilities.

Research on dynamic capabilities has taken different streams, elaborating how capabilities manifest themselves in various forms (Eisenhardt and Martin, 2000; Helfat and Raubitschek, 2018; Schilke *et al.*, 2018; Vial, 2019). First, research studies how dynamic capabilities are built and how they are formed by various variables (Zahra *et al.*, 2006). Scholars in this stream employ a perspective of learning and innovation (Helfat and Peteraf, 2009; Teece, 2007), as dynamic capabilities can be derived from learning processes (Zollo and Winter, 2002). Teece indicates a learning process based on activities of detecting threats and opportunities, coordination activities outlining boundaries, decision-making rules, and building loyalty, as well as reconfiguration activities (Teece, 2007). This stream traces dynamic capabilities to routines, processes, and collective activities. Routines are repeated patterns of interdependent actions (Feldman and Pentland, 2003; Pentland *et al.*, 2012) and support to manifest and further build dynamic capabilities (Helfat and Peteraf, 2009). This stream further studies R&D capabilities and the possibility of developing capabilities based on internal R&D processes (Helfat, 1997; Kor and Mahoney, 2005). Indeed, intensive R&D can lead to increased development of dynamic capabilities (Kor and Mahoney, 2005). Further, scholars look at dynamic capabilities related to the position of the firm in the network and its competitive environment. Here, the focus is on alliances and enablers for firms to source knowledge beyond their own boundaries. The learning perspective is extended across organisational boundaries (Rothaermel and Alexandre, 2009; Volberda *et al.*, 2010). Additionally, the actual position of a firm in its network, i.e., the national system of innovation as well as its' market competition (Tidd *et al.*, 2006), influences its innovation strategy and, as such, influences its' development and use of dynamic capabilities. Extending the view of the position of the firm in the network, more recently, dynamic capabilities are used as a lens to study innovation based on platforms (Helfat and Raubitschek, 2018; Karimi and Walter, 2015; Okano *et al.*, 2022; Shi *et al.*, 2021; Zeng and Mackay, 2018). Research also studies how dynamic capabilities can be built within focused niches, e.g., for sustainability (Castiaux, 2012). Calls have been made to further engage in how dynamic capabilities are developed and leveraged to innovate (Pentland *et al.*, 2012; Schilke *et al.*, 2018; Teece, 2007) and further to study the development of dynamic capabilities over time, as this knowledge is valuable, particularly for

practice. Currently, the understanding of the design and use of repeatable mechanisms to build dynamic capabilities is limited (Vial, 2019).

Second, research studies the utilisation of dynamic capabilities. Most scholars within this stream study the alignment of exploration and exploitation (Benner and Tushman, 2003; Lubatkin *et al.*, 2006; Raisch *et al.*, 2009), often building on ambidexterity as a focus to study dynamic capabilities (O'Reilly and Tushman, 2011). Researchers try to understand how to utilise dynamic capabilities while maintaining a balance of flexibility and efficiency (Eisenhardt *et al.*, 2010), stability and change (Farjoun, 2010), and incremental and radical innovation (Tushman *et al.*, 2010). Further, the reconfiguration of capabilities (Xie *et al.*, 2022) is analysed. Based on this stream, research evolved to understand the utilisation of dynamic capabilities and more general innovation strategies as path-dependent, as, next to the position of the network, a dependency on future possibilities exists (Tidd *et al.*, 2006). Research in this stream argues that path dependency can be a property of dynamic capabilities (Vergne and Durand, 2011). As dynamic capabilities utilise organisational processes and routines (Helfat and Peteraf, 2009; Zollo and Winter, 2002), these routines and their manifestation can become path-dependent by the effects of self-reinforcing mechanisms (Vergne and Durand, 2011). While it is clear that remaining balance plays a crucial role in utilising dynamic capabilities, it remains unclear which dynamic capabilities can be utilised to achieve certain outcomes and how specifically that utilisation can look. Additionally, which capabilities help respond to threats and how these capabilities can be manifested remains vague.

Third, scholars look at the outcome of utilising dynamic capabilities. Typically, the outcomes of utilising capabilities can be innovation, the maintenance of a competitive advantage, and the ability to respond to threats (Noman and Basiruddin, 2021; Randhawa *et al.*, 2020; Teece, 2007). Further, capabilities can not only be built by R&D, but also can foster R&D to achieve more radical innovation and to exploit better knowledge stemming from R&D to increase long-term returns of innovation (Denicolai *et al.*, 2016). However, the actual outcomes of dynamic capabilities are often generic or unclear. It remains vague how competitive advantage (e.g., higher revenues, better quality, higher market share) is achieved by utilising dynamic capabilities, how it can be maintained, and how dynamic capabilities support responding to threats.

Business Models and Business Model Innovation

Business Models

The concept of BM has gained increasing momentum since the mid-1990 in research and practice (Budler *et al.*, 2021; Wirtz *et al.*, 2015; Zott *et al.*, 2011).

Still, scholars do not agree on what a BM is and provide various definitions of the concept, leading to a lack of clarity (Budler *et al.*, 2021; Foss and Saebi, 2017; Zott *et al.*, 2011). With increasing interest, different schools of thought emerged, resulting in different interpretations of the concept of BMs (Massa *et al.*, 2017; Wirtz *et al.*, 2015). Construct validity in BM research requires engaging with existing conceptualisations and positioning one's own research (Bagozzi *et al.*, 1991).

Three fundamentally different interpretations exist: BMs (1) as an attribute of real firms, (2) as a cognitive/linguistic schema, and (3) as a formal, conceptual representation describing the activities of a firm (Massa *et al.*, 2017). The first interpretation uses the concept to study how BMs of real firms work by a composition of variables (Abdelkafi *et al.*, 2013; Bohnsack *et al.*, 2014, 2021; Casadesus-Masanell and Zhu, 2010; Laukkanen and Patala, 2014; Remane *et al.*, 2017). The central idea of the second interpretation is that managers make decisions based on images of a real system (i.e., the BM) but not the real system itself (Amit and Zott, 2015; Martins *et al.*, 2015; Massa *et al.*, 2017). The third interpretation explicitly writes down formal models to reduce complexity (Massa *et al.*, 2017). A widelyknown example of this interpretation is the Business Model Canvas and its complementing works, providing meta-models of BMs (Osterwalder *et al.*, 2005; Osterwalder and Pigneur, 2010; Osterwalder and Pigneur, 2013).

For our research, we adhere to the first interpretation, seeing BMs as attributes of real firms. With that, we follow one of the central themes of BM research, using a system-level approach to study how organisations do business (Zott *et al.*, 2011). Further, we follow the seemingly growing consensus (Costa Climent and Haftor, 2021; Massa *et al.*, 2017) to view a BM as the design and architecture of how a business creates, delivers, and captures value (Osterwalder and Pigneur, 2010; Teece, 2017) and act on the firm-level for our analysis.

Next to these three interpretations, scholars use different views on BMs over all three interpretations: a static and a dynamic view (Demil and Lecocq, 2010; Wirtz *et al.*, 2015). The static view incorporates representations of BMs based on components. The dynamic view embraces change and innovation of and in BMs. We use the static view to describe the components constituting CEWE's BMs at certain points of time. This approach supports us in setting out the key characteristics of our unit of analysis to allow progress in research (Foss and Saebi, 2017). Wirtz *et al.* (2015) stress the heterogeneity of constituting components of BMs in different conceptualisations. However, the main components of the widely used BM representations (Teece, 2010) and practitioner-oriented approaches, such as the Business Model Canvas (Osterwalder and Pigneur, 2010) or the Business Model Navigator (Gassmann *et al.*, 2013), can be aggregated into four distinctive components using different terminology: value proposition, market segments, value

Table 1. Business model components.

Element	Constituting components
Value proposition	Value proposition, offering, products and services, brand
Market segments	Market segments, customers (B2X)
Value creation	Partners, resources, activities, customer relationships, channels
Value capture	Revenue streams, cost structure, investments, financial viability

creation, and value capture mechanisms (Foss and Saebi, 2017; Saebi *et al.*, 2016; Teece, 2010; Weking *et al.*, 2020) (Table 1).

The second, dynamic view, uses “*the concept as a tool to address change and innovation in the organisation, or the model itself*” (Demil and Lecocq, 2010). This dynamic view aims to understand a firm’s activities employed to change between different BMs and the mechanisms for value creation and capture (Cavalcante *et al.*, 2011; Demil and Lecocq, 2010; Ritter and Lettl, 2018; Zott *et al.*, 2011). We use that dynamic view to understand how the components of a BM are adapted or redesigned between different points of time. Indeed, innovation, change, and evolution have become essential research foci on BMs (Wirtz *et al.*, 2015).

Business Model Innovation

In the following, we understand BMI as “*designed, novel, nontrivial changes to the key elements of a firm’s BM and/or the architecture linking these elements*” (Foss and Saebi, 2017). Following this definition, we view BMI as “deliberate” changes (Demil and Lecocq, 2010). Deliberate implies that a manager or an organisation purposefully takes a decision, which results in the activity of BMI. Some scholars understand BMI to take place in one single component of a BM (Amit and Zott, 2012; Bock *et al.*, 2012; Schneider and Spieth, 2013). Other scholars stress that one or several components need to be changed (Frankenberger *et al.*, 2013; Günzel and Holm, 2013; Lindgardt *et al.*, 2009), while further scholars require novel combinations (Velamuri *et al.*, 2013; Yunus *et al.*, 2010).

To study business model innovation, we follow the distinction of Foss and Saebi (2017). A modular BMI refers to an evolutionary and focused BMI, innovating one or a few components of a BM. As such, an organisation runs the same business model but innovates the way how it is operated (e.g., the process or technology). The existing business model is adapted, yet no entirely new model is brought to the market. This is largely similar to “product”, “process”, or “position innovations” (Tidd *et al.*, 2006), with changes in one or few business model components. An architectural BMI refers to an adaptive and complex BMI, innovating several BM

components simultaneously. With an architectural BMI, an organisation changes its business model itself, offering a new business model on the market, and may even lead to a “paradigm innovation” (Tidd *et al.*, 2006). Table A.1 in the appendix summarises the different definitions used throughout this research.

BMI in successful firms aims to re-design value creation and redefine value propositions for various stakeholders. Organisations that innovate their BM profit from positive performance (Clauß *et al.*, 2019; Cucculelli and Bettinelli, 2015; Tavassoli and Bengtsson, 2018; Zhang *et al.*, 2021). However, an organisation and its BMs need to keep up with changing conditions (Ferreira *et al.*, 2013; Massa and Tucci, 2014; Reim *et al.*, 2018; Wu and Nguyen, 2019). Further, as Chesbrough (2007) demonstrated, technology per se has no inherent value. Instead, it needs to be embedded into products, services, and subsequently into BMs to realise its potential (Zott *et al.*, 2011).

An emerging research focus looks at BM dynamics or change, with different framings such as “learning”, “reconfiguration”, or “evolution” (Berends *et al.*, 2016; Demil and Lecocq, 2010; Foss and Saebi, 2018; Sosna *et al.*, 2010). As priorly introduced, we refer to BMI as deliberate changes. In the following, we will refer to continuous BMI as an ongoing process constituted of various activities to innovate one or several components of a BM repetitively over time. This research stream implies that one-time BMI is insufficient to ensure a long-lasting competitive advantage (Randhawa *et al.*, 2020) and studies BMI as an organisational change process, e.g., identifying different capabilities to support the process (e.g., Achtenhagen *et al.*, 2013; Demil and Lecocq, 2010; Doz and Kosonen, 2010). Scholars in this stream acknowledge the importance of experimentation and learning in that process (Andries *et al.*, 2013; Eppler *et al.*, 2011; Günzel and Holm, 2013; Sosna *et al.*, 2010) and elaborate on the necessity to adapt and align value creation and value capture (Foss and Saebi, 2018; Ritter and Lettl, 2018), as BMI is subject to inertia with time (Foss and Saebi, 2017).

Prior literature on business model innovation focused on antecedents and preconditions of BMI, but less on how it unfolds in practice over time and its’ outcomes (Chesbrough *et al.*, 2018; Foss and Saebi, 2017; Sjödin *et al.*, 2020). Research on BMI needs to study antecedents and outcomes, as well as how continuous BMI unfolds in practice in detail (Chesbrough, 2010; Foss and Saebi, 2017; Sjödin *et al.*, 2020).

Dynamic Capabilities and Business Model Innovation

Dynamic capabilities and BMI are interrelated. Foss and Saebi (2017) stress investigating the role of dynamic capabilities as drivers of BMI, and Teece (2017)

suggests studying BMI to understand dynamic capabilities in more detail. Prior research conceptualised dynamic capabilities as a driver of BMI in different forms (Achtenhagen *et al.*, 2013; Heider *et al.*, 2020; Randhawa *et al.*, 2020; Teece, 2017). Dynamic capabilities account for an organisation's ability to maintain profitability over a longer period, including designing and adjusting BMs (Teece, 2017). Further, an organisation's choices regarding its BM depend on its dynamic capabilities (Teece *et al.*, 2016). Organisations with stronger dynamic capabilities have been acknowledged to have more freedom to build BMs that entail a radical change and to implement effective BMs (Teece, 2017). Thus, dynamic capabilities are antecedent to BMI and enable it (Achtenhagen *et al.*, 2013; Soluk *et al.*, 2021). Further, the effects of BMI have been described priorly to affect dynamic capabilities (Schneider and Spieth, 2014). Dynamic capabilities support the scaling of BMs (Sandberg and Hultberg, 2021) and are a key driver to innovate a BM continuously (Ricciardi *et al.*, 2016), and organisations need to develop and maintain them to address change in their BMs (Cavalcante, 2014).

Additionally, research proposed BMI as a dynamic capability itself. BM design has been characterised as a dynamic capability (Amit and Zott, 2016). On a broader scale, the ability “*to select, adapt, and match the BM and the environment is a capability*” (Teece, 2017). Contradictorily, dynamic capabilities have been described as dependent on the organisational flexibility allowed by BM choices (Teece, 2017). This falls in line with the discussion about the changing conception of dynamic capabilities by Peteraf and Haridimos (2017), with organisations' ability to change their resources based on these capabilities. Existing capabilities need to be reconfigured when innovating a BM to address changing conditions (Chesbrough, 2010; Randhawa *et al.*, 2020).

While prior research showed dynamic capabilities and BMI are related, it conceptualises the interrelation differently. Dynamic capabilities account for an organisation's long-term profitability, are conceptualised as a key driver for continuously innovating a BM (Ricciardi *et al.*, 2016), and need to be reconfigured when innovating a BM (Randhawa *et al.*, 2020). However, prior research does not manage to explain in detail what role dynamic capabilities take in continuous BMI to achieve long-term profitability but rather elaborates on their importance (“key driver”). Further, how capabilities can be reconfigured or developed along continuous BMI remains unclear and requires further research (Foss and Saebi, 2017; Teece, 2017).

Research Design

We employ a single, in-depth, longitudinal, exploratory, and inductive case study design, with the aim of closing “gaps and holes” in the existing theory (Pan and

Tan, 2011; Ridder, 2017). We use a four-phase approach to conduct our case study (Fig. 1). Central to our research design is a two-part process study. First, we perform a descriptive and deductive study of how CEWE innovated its BMs. Then, we follow an inductive approach to analyse why certain activities were performed, which triggers occurred, what outcomes are created, how capabilities are developed and/or employed, and, more generally, why the overall process seems successful in our case.

In phase one, we select a conceptual framework (Dul and Hak, 2008; Yin, 2018). For the deductive part of our research—understanding which BMs CEWE used over time—we use an architectural BM definition, clustered into four dimensions, see Table 1 (Weking *et al.*, 2020). We theoretically sampled our case, i.e., we selected the case as it is particularly suitable for the research relations among the constructs of interest, in our case, the continuous innovation of BMs over a long time, impacted by technology (Eisenhardt and Graebner, 2007). We then develop a data collection strategy, building on different elicitation methods to create different types of data and multiple data sources to enable the triangulation of findings and to support assertions about interpretations (Yin, 2014). Combining different data types, i.e., qualitative and quantitative evidence, can also prove synergistic (Eisenhardt, 1989).

The second phase focuses on data collection and analysis. We use publicly available information and internal data sources to collect data, conduct interviews, and perform on-site visits. Our primary data sources are interviews, annual reports provided by the company for the entire analysis period, and investor relation-related publications. Direct observations during a company tour by a local manager enable us to obtain a more detailed and vivid understanding of the case. To allow us to create a deep and nuanced account of the case (Schultze and Avital, 2011) and focus

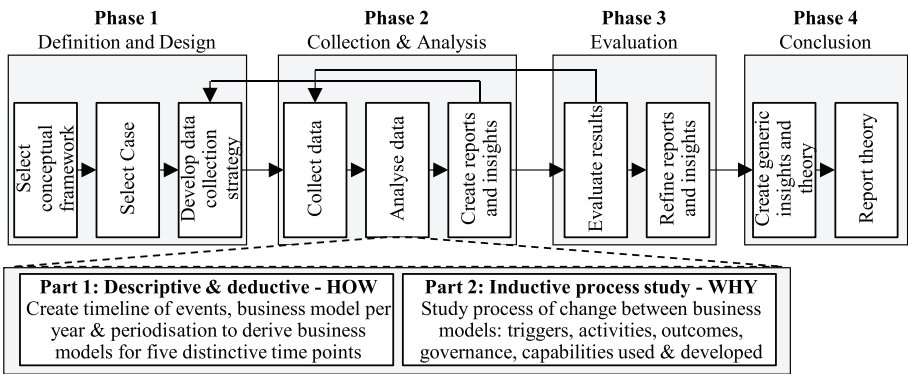


Fig. 1. Research phases of the case study approach (adapted from Grace *et al.* (2019)).

on questions of how and why CEWE engaged in certain activities, we conducted interviews, mainly with long-term employees, which enabled us to elaborate on the entire period of our analysis (Table 2).

We conducted the interviews in the native language of the interview partners and used semi-structured interview guidelines. To embrace the depth and richness of the data, we used an exploratory stance by iteratively revising our interview guidelines based on insights from previous interviews. We transcribed every interview according to the rules of Dresing and Pehl (2018) and verified each transcript with the interviewee. Next to the interviews, we used annual reports, company publications, and internal presentations for triangulation, especially for events that occurred more than five years ago. Secondary data include publicly available data accessible from the company homepage and the press/media archive (see Table 3).

Table 2. Overview of interviews conducted.

ID	Interview partner	Company affiliation (by 2021)	Length of interview
1	Managing director company site & managing director of a subsidiary company	20 years	First interview: 75 min
2			Second interview: 40 min
3	Commercial manager/CFO company site	27 years	First interview: 40 min
4			Second interview: 55 min
5	Technical director/COO & CPO company site	27 years	45 min
6	Head of logistics company site	19 years	38 min
7	Head of customer support for the regional market	12 years	60 min
8	Marketing team leader	3 years	45 min

Table 3. Data sources.

Type of data source	Yearly coverage	Number of publications
Official annual reports (publicly available since 2006)	1994–2019	26
Official quarterly report	2006–2020	44
Official press releases	2016–2020	272
Official investor relations news	2016–2020	41
Official investor relations ad-hoc releases	2006–2020	51
Official investor relations presentations	2009–2018	44
Company presentations	2003–2020	13
Official company factsheets	2020	5
Scientific publications referring to the case company (mostly on production technology)	2008–2016	12

Our data analysis is twofold, building on a process study. This research approach enables one to study how and why organisational phenomena emerge and develop over time, building on empirically evolving phenomena (Langley, 1999). We use this process lens (Langley, 1999; Langley *et al.*, 2013), as it allows us to study the causes and outcomes of the continuous BMI of CEWE and the causal relationships of how it unfolded (Markus and Robey, 1988). To first understand the different BMs CEWE employed over time, we use an architectural (i.e., component-based) BM description, see Table 1. We code the BMs for each year chronologically. Further, we note down all activities CEWE engaged in and which events occurred during that year. We observe distinctive BMs between specific points of time. To reduce complexity, we employ periodisation, dividing the chronological narrative and BMs into distinct episodes (Cornelissen, 2017; Langley, 1999; Witkowski and Jones, 2006). This supports the strengths of a case study, being a “good story” and setting out constructs from that story (Dyer and Wilkins, 1991).

In the second step, we use an inductive approach to focus on how and why CEWE innovated its business models. We perform open, axial, and selective coding (Corbin and Strauss, 1990; Glaser and Strauss, 2008) on available data sources and the already coded activities and events from the deductive step. The “how” includes studying which BMI CEWE engaged in and what kind of BMI (modular or architectural) each identified BMI represented. After the open and axial coding, we focus on *activities* and *triggers* that start new activities with selective coding. Further, we focus on *outcomes* of specific activities (e.g., “new organisational unit”), that accompanied the *activities* to reach particular outcomes, e.g., governance structures, external support of further aspects such as tools used. Following this approach, we identify a series of activities linked together, triggers, and capabilities leading to certain outcomes for each of these activities. Following the principle of constant comparison (Urquhart *et al.*, 2010), we alternated between data collection and analysis (as evaluation, see phase 3 in Fig. 1), examining additionally collected data in the light of other developed codes and extant literature.

In the last step, we focus on generalising the case-specific results. We develop a process model for continuous BMI based on our process lens. The model builds on dynamic capabilities. We deliberately focus on the essential characteristics observed within our process study, allowing parsimony and generality while still aiming to provide a comprehensive theory (Langley, 1999; Suddaby, 2010). The rich case description allows understanding various aspects of the model in detail. However, in its pure simplicity, the process model describes how continuous BMI unfolds and what role dynamic capabilities take in that process.

The Continuous Business Model Innovation of CEWE from 1994 to 2020

The photo industry and CEWE's role in 1994

In the mid-1990s, digital imaging technologies and digital photography emerged to disrupt hardware manufacturers (camera and film) and service providers (photofinishing and printing). Until then, laboratories produced prints from a photographic film using a chemical process. Photographers sent their films to laboratories either directly or through a retail partner. By 2003, digital cameras had surpassed analog cameras in sales (van der Aalst, 2016). Photos were now being stored on digital media and could be viewed directly on digital screens. As a result, consumers no longer required printed images. Although, with the onset of digital printers, it was also possible to make physical copies of digital photographs. The cost of high-quality digital prints in small quantities soon fell, especially when compared to offset printing, leading to a drop in the turnover of photo laboratories. From 2011, sales of digital cameras began to decrease due to the rise of smartphones and their photographic capabilities (CEWE, 2018). Nowadays, the majority of pictures are taken *via* smartphones. Hence, traditional hardware manufacturers and service providers had to rethink their BM. While prominent players like Kodak went out of business, CEWE succeeded and is now the market leader in the European photofinishing industry.

CEWE was founded in Germany in 1961 as a photo laboratory and a retail operation for photographic equipment. CEWE's core business relied on consumers placing in-shop orders with the help of retail partners, who forwarded the orders to the laboratory for developing and printing. The organisation has around 4,000 employees and had a turnover of approximately 727 million EUR in 2020. The company is the market leader in Europe in the photo finishing industry. CEWE became a publicly listed company in 1993, enabling it to generate capital to start its digital transformation. This situation frames the starting point of our analysis in 1994.

In 1994, CEWE relied on retail partners, who took orders from end consumers (B2B2C). Its core know-how was technical and related to the company's production processes. Retail partners sent a consumer's film rolls to CEWE, which printed the photographs and returned them to the retail partner. CEWE was a white-label brand, generally unknown to end consumers. Nevertheless, with over 20 production sites around Europe, the company was the market leader in the photo-finishing industry in Europe in 1994. In addition, the company had a direct B2C hardware segment, which was, and still is, minor in revenues. CEWE operates its own retail stores where it sells hardware, i.e., cameras and accessories, to end consumers,

Table 4. CEWE's business model in the year 1994.

Value Proposition		Value Creation	
• High-quality photos • Fast delivery • Technological leader	• White label brand • Specialist in photographic hardware	• Logistics partners for sending shipments	• Own hardware stores • Photographic printing in own laboratories
Market Segments		Value Capture	
• Retail partners as points of sale (B2B2C) to private consumers • Mass-market orientation in 11 European countries	• Direct contact to consumers only in hardware stores • Professional photographers as commercial customers	• Costs of personnel, production processes, and technology • IPO provides funds for investments	• Revenue-based on fixed service prices • Revenue from photofinishing and hardware retail

mostly professional photographers. In 1994, it had stores in Slovakia, the Czech Republic, and in the city of Oldenburg in Germany, the company's headquarters. Table 4 sets out the company's BM as of 1994.

Business models and episodes during CEWE's continuous business model innovation

We structure CEWE's BMI along four episodes with different foci. Each episode starts with BMs (CEWE operated multiple BMs in parallel) at a certain point of time t (e.g., $t = 1$), incorporates various activities of modular BMI that lead to architectural BMI and a new BM $t + 1$ (e.g., $t = 2$). To showcase *how* CEWE continuously innovated its BMs and *why* it was successful, we focus on the activities performed between the timepoints $t = 1$ to $t = 5$. Figure 2 provides an overview of the BMs between the four episodes.

In 1994, CEWE operated two BMs: a B2B2C model as a white label brand (the production of photos and sales *via* retail partners) and a B2C hardware retail model (sales of photographic equipment to mostly professional photographers). As the only significant changes to the hardware retail model refer to entering new geographical markets, we focus on the core BM, the production and sales of photo copies. While CEWE created value through the physical process of producing pictures in laboratories, it enabled fast delivery utilising its 24 production sites around Europe in 1996 (annual report 1996). Hence, CEWE had contracts with partners, who are the face towards the consumer to capture value.

By $t = 2$, CEWE offered the first B2C services BM. While this new BM only accounted for minor revenues, this, for the first time, provided an entirely new logic compared to CEWE's existing BMs. By $t = 3$ CEWE invested more into technology and developed a consumer brand with the new leading product, the CEWE PhotoBook, offering a B2C BM. CEWE not only sold the PhotoBook directly

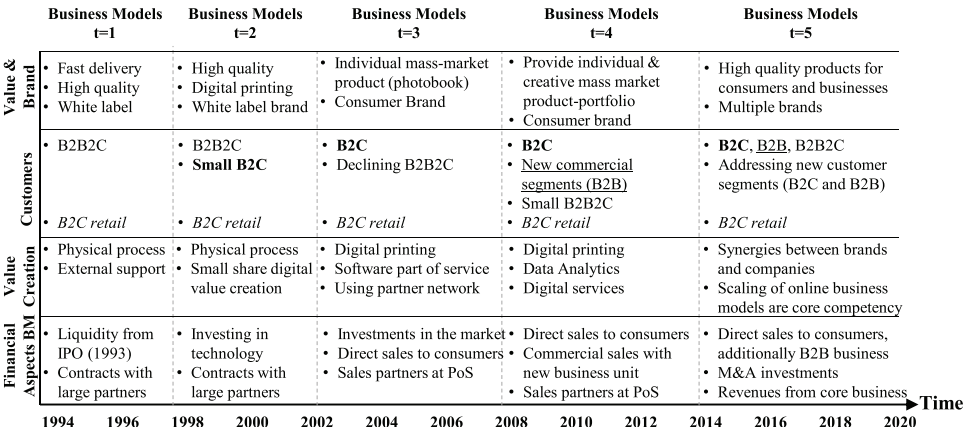


Fig. 2. Business models offered by CEWE since 1994.

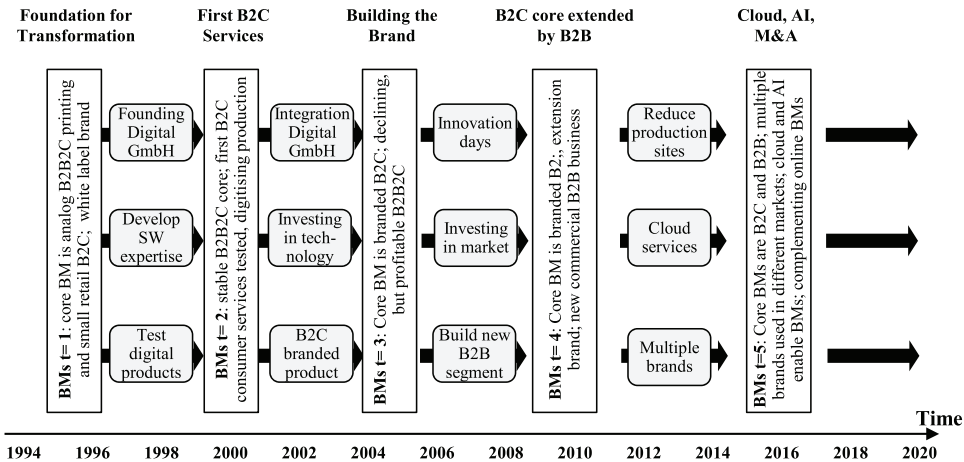


Fig. 3. Four episodes in CEWE's continuous business model innovation from 1994 to 2020.

via its digital sales channels but also through existing Point of Sale (POS) retail partners and pick-up locations (B2B2C). With $t = 4$, CEWE added commercial online printing as a B2B BM to the existing photo finishing B2C and the B2B2C retail hardware business. Within the last episode of analysis $t = 5$, CEWE decided to operate different BMs at different subsidiaries. Next, we focus on how and why these BMs changed, i.e., how CEWE performed continuous BMI activities and why these were successful.

Episode 1: Testing first B2C services (BM $t = 1 \rightarrow$ BM $t = 2$)

Based on the initial BMs in 1994, CEWE adapted its existing BM by modular BMIs. To enhance *value creation*, the CEO developed new competencies, despite the low relevance of new technologies such as digital photography: “CEWE [...] is expanding its expertise in digital photography, although this is still a niche market [...]” (annual report 1996). It was still unknown if and how new technologies such as digital imaging would transform the market segment (annual report 1996, 1998). However, based on reports of that time, the relevance of digital photo technology seemed to be low: “*Digital photography is still practically non-existent in amateur photography [...]*” (annual report 1995).

In 1994, CEWE tested the first printer able to print digitally stored images. A *Picture-CD* further aimed to use digital storage means, even though its relevance seemed to be decreasing after the market introduction: “*The photo CD business is stagnating at only a ‘moderately’ interesting level. The image data carrier is a niche product [...]. We have consolidated production [...] at a single site*” (annual report 1996). In 1997, CEWE installed the first on-site *Photo Kiosk*, a machine to place orders in retail partners’ stores to produce pictures. The on-site machine reduced transaction costs and shortened the processing time of photofinishing.

Further, with the help of external support from an IT company, CEWE developed and introduced the *PhotoIndex*. The *PhotoIndex* showed all photos from a film roll on a single sheet, enabled by software and digitising of pictures. This product eased the process of archiving and re-ordering photos and created additional revenue: “[...] *it makes it easier to archive films and reorder photos, which we notice in a sharp increase in reorder business. This also generates additional sales for our retail partners and for us*” (annual report 1996). By 1997, it evolved to the market standard: “*We have enforced the PhotoIndex, [...], as a market standard in 1997.*” (annual report 1997). With this new product, CEWE adapted the existing BM to enable additional after-sales business.

Until then, CEWE adapted its existing BM, including its product, but did not offer a new BM. Despite the missing relevance of digital photography, the use of CDs as memory storage, and the use of the internet for consumers, CEWE’s CEO still insisted on further building on these technologies. Even though this decision was attached to high uncertainty, he felt the technologies’ relevance might increase in the future. Consequently, he initiated two innovation activities: founding a subsidiary dedicated to digital themes and engaging with end customers directly that affected CEWE’s whole BM (i.e., architectural BMI), resulting in new BMs in $t = 2$.

First, the CEO installed a new subsidiary company that focused purely on digital themes (“Digital GmbH”) and drove new developments independently of

day-to-day business: “We had the opportunity [...] and [...] resources to set up an independent department that could deal with the topic of digital, and the use of digital data to produce prints. Under the leadership of our current CTO, an independent company within the organisation was founded that could drive these developments forward, totally independently from ongoing transformations within the company sites.” (ID 4). This subsidiary fostered fast decision-making without involving the core business. CEWE aimed to employ a new workforce with knowledge in the digital field to develop internal know-how and capabilities. Moreover, the unit encouraged entrepreneurial spirit and created, tested, and rolled out new, technology-based BMs parallel to the day-to-day business.

Second, CEWE engaged in direct customer contact, offering a B2C BM. In 1996, CEWE still elaborated on the importance of their long-lasting partnerships and avoided direct interactions with consumers: “CEWE will continue to be a partner of the retail trade in all its forms and will not seek the direct route to the consumer. CEWE will therefore not engage in any mail order or direct sales activities in its traditional sales region.” (Annual report 1996). However, by 1998 this strategy changed, as the management team introduced B2C services (digital and analog ones) and enabled mail orders. For the first time, CEWE introduced a B2C BM besides its small-scale hardware business.

Episode 2: Switching to B2C business and building the brand (BM $t = 2 \rightarrow$ BM $t = 3$)

During the next episode, CEWE innovated specific parts of their BMs by modular BMIs shifting toward digital technologies. During the start of this episode, CEWE relied on software to organise production and installed digital printers, and digitised the production of photos itself (annual report 1999). Based on the *Photo Kiosk*, introduced in 1997, CEWE launched the *PhotoMaker* as its first mass-market product for consumers and installed it in retail-partner stores. This innovation enabled to offer new value propositions and new customer channels: “The customer [...] needs possibilities to provide his pictures either at the Point of Sale [...] or even from his own home.” (ID 5). In addition, customers could individualise their products in the form of [...] order pictures, but also greeting cards, calendars, and other products on the screen with a simple touch-screen operation” (Annual report 1999).

Moreover, driven by the Digital GmbH, CEWE tested and introduced “digital services at CEWE” (annual report 2000). These services did not necessarily include the production of physical pictures. With the *Picture CD*, CEWE added for the first time—a software to their product. The *Picture CD* included editing software along

with the provided pictures (annual report 1998). Additionally, *PhotoNet* directly targeted consumers, allowing them to save their photographs online and “*present them to friends*” (annual report 1998). It followed the same principle as the *Picture CD*, but used the internet to offer a new consumer service.

In 1999, CEWE introduced *Photoworld*, an internet-based service enabling photo retailers to market their services *via* the internet, while CEWE is responsible for updating and maintaining the system. Developed in collaboration with external support from an IT organisation, *Photoworld* created recurring revenues for CEWE. Via *Photoworld*, customers could order online, which usually took place on a partner’s site hosted within this service (annual report 2000). Hence, this new service not only relied on the physical production of pictures but also opened additional sales channels *via* partners to increase the number of orders, enhancing the existing BM.

Based on the various experiences with new digital technologies, the management realised a dedicated exchange of ideas around the topic “digital” was necessary and decided to set up a “digital circle.” It was a weekly meeting of employees from different departments, including the CEO, to discuss current trends focusing on innovation: “*there were various experiments to introduce the digital into our business*” (ID 5). On the one hand, this continuous process fostered the generation of ideas. On the other hand, it eased the integration of ideas from the Digital GmbH subsidiary into the mother company. By capturing various experiences and ideas for different departments, the digital circle also created a shared commitment and quickly established a weekly routine.

Despite the various modular BMIs performed, CEWE’s management started to sense that technological innovations on products or processes might not be sufficient. First, bargain power lay with retailers, and competition was fierce, leading to dropping margins of photo production. Based on the still predominant B2B2C BM, CEWE was highly dependent on its partners and subject to their bargaining power. Second, CEWE realised the digital trend early on, and their investment into digital technologies, e.g., digital printers or the photo kiosk to transmit digital saved image data, turned out successful, even if revenue shares were minor but steadily growing. Third, sales of digital cameras increased, and more computers gained the ability to display digital pictures, which turned printed pictures obsolete: “*At this point in time, the customer does not really need us anymore*” (ID 3). Due to these developments, CEWE realised that new products and services were necessary to ensure that pictures continued to be produced and consumed physically or build entirely new services around pure digitally consumed pictures.

As a result of these factors, CEWE introduced an internet-based service, *PhotoWorld*. Based on the positive feedback regarding individualised products, CEWE observed that this offering was continuously growing. In addition, the introduction of the *Picture CD*, along with further innovations such as the

digifilm maker, brought about new possibilities. CEWE realised that digital data became available with these mediums, and they could learn insights about consumer behaviour. These insights ranged from the time between taking and printing a picture, to the content of ordered pictures, and which photo is printed if the same motive was shot multiple times. As a result, CEWE started to emphasise consumer behaviour analysis, realising the value of these insights.

This mixture of external pressure, technological developments, and newly developed internal capabilities led to a key decision in the continuous innovation of CEWE's BMs. Resulting from ideas of the Digital GmbH and the "digital circle," CEWE decided to offer an entirely new B2C BM based (i.e., architectural BMI) on a new product that directly targets consumers and leverages know-how about consumers and digital technologies: The *CEWE PhotoBook*. With this new product, CEWE changed its core logic of doing business. To this end, CEWE's top management decided on three activities. First, CEWE hired IT professionals on a large scale to accelerate the development of know-how and subsequent digital products: *"A lot happened from the inside. The decision-making [...] to somehow hire over 200 IT professionals to produce our own software first as the basis for the production of books and other products, was quite crucial"* (ID 4). IT professionals worked on digital products and on operations and production. Second, the increasing relevance of digital for CEWE's business led to the decision to reincorporate the subsidiary Digital GmbH in 2004: *"[...] We noticed that this initially marginal or partial business then became a central business"* (ID 3). Third, to counteract price wars and decreasing margins due to CEWE's dependency on a B2B2C BM, the CEO decided that CEWE should act as a consumer brand, moving away from a white-label: *"And then, with our CEO, came the clear focus on brand strategy, which should prevent us from being suddenly bathed in a price war [...]"* (ID 5). This mixture of activities and capabilities triggers the third episode with a B2C BM and brand strategy as the organisation's core.

Episode 3: Building B2B (BM $t = 3 \rightarrow$ BM $t = 4$)

During the third episode, CEWE engaged in different initiatives on specific parts of their BM to support growing the branded and consumer-oriented BM (i.e., modular BMI). The priorly introduced B2C BM became the organisation's core and required a new organisational thinking. The CEO enabled this new organisational thinking by transforming from a production-oriented company into a digital marketing organisation, placing market research and marketing at the center of product development. CEWE shifted its investment logic from resources and technology towards investing primarily in the market itself. Most investments targeted opening up and expanding the market for the first time in the company's history.

Based on the core product *CEWE PhotoBook*, CEWE successfully operated and grew its new core BM of B2C. During that period, the management realised that various modular innovations stemmed from the cross-functional formats such as the digital circle introduced in the second episode (meanwhile known as the “innovation circle”: “*But I would also say that the major guidelines in the company always go through [...] the innovation circle*” (ID 2). Sensing this potential, CEWE took the same principle to a broader level by introducing “innovation days,” during which all departments, hierarchies, and sites came together. The goal was to create an organisation-wide communication and cross-disciplinary innovation. “*The innovation days [...] are extremely important. [...] because all the important decision-makers sit around the table.*” (ID 2).

Despite the success of the new BM, CEWE realised that consumers use the photobook mainly to create a personalised book with pictures from a vacation, a special occasion like a wedding, or, most often, a year’s review. This makes the product a popular Christmas gift. As a result, the product is highly cyclical: The fourth quarter accounts for almost half of the annual turnover in 2008. However, personnel and production capacities remain barely used during months of low demand.

CEWE realised that a new BM was necessary to utilise unused resources and keep growing. The management used their available resources and experiences and performed an architectural BMI to offer an entirely new BM, directly addressing business customers (B2B). The success of the B2C business allowed investments, as it “*[...] has given us the freedom to breathe, to do what we are doing today: communicating our brand.*” (ID 3). In addition, CEWE developed specialised knowledge on digital printing and has grown a large network of partners over the past decade (e.g., for logistics). Based on this untapped potential, CEWE introduced in 2008, an entirely new BM addressing the B2B segment: “*We are making digital printing suitable for the mass market—and are using our know-how from the photo market. [...] Commercial digital printing is the growth area for the future.*” (CEWE’s annual report 2009). CEWE acquired *diron* in 2008, a web-to-print software company, to start this segment. The new “commercial online printing” BM produces made-to-order B2B products (e.g., schoolbooks) as “web-to-print,” especially during the low demand period of the year. The acquisition of *saxoprint* in 2012, a specialist in online-connected offset printing, further aimed “*to achieve economies of scale through industrially efficient production*” (annual report 2011).

Episode 4: Multiple brands and cloud & AI (BM $t = 4 \rightarrow$ BM $t = 5$)

Within the fourth episode, CEWE performed various modular BMIs. The organisation further built its brand to nourish its core business, establishing it in the European market with the photobook launched previously. CEWE’s marketing

now enabled cross- and up-selling activities. In the consumer sector, products and services are continuously adapted and advanced, extending the product portfolio: photobooks, postcards, calendars, posters, phone cases, mugs, and photo-related gifts. CEWE also extended its digital channels. It offers online tutorials and webinars to familiarise its core customer segment, to a large part of middle-aged women, with its products and services. In 2010, CEWE introduced its first mobile phone app, offering new channels for its existing BMs.

Additionally, CEWE developed extensive know-how in digital technologies and data analytics. The management decided to introduce new cloud-based services and further build on data analytics to leverage this know-how. While mobile apps have been in place before, cloud-based services created recurring revenue streams by subscription models and after-sales services. At the same time, data analytics supported switching the logic of ordering photo products from pull (consumers create a photobook) to push (the consumer automatically gets a digital, fully prepared photobook ready to order). In 2015, CEWE launched *myphotos*, a cloud-based storage solution for saving and sharing pictures and enabling direct ordering of photos or a photobook. CEWE leveraged its developed capabilities and offered a freemium model for the first time: A basic contingent of storage is free. If a user requires additional storage, a fee applies. Furthermore, consumers can share digital photo compilations with friends for special occasions such as weddings. By that, also non-customers of CEWE can be addressed to buy, e.g., a photobook, as the product is digitally visible and ready to order. With technological advancements in face and object recognition, “photobook on command” (Company Presentation August 2020) becomes possible.

However, CEWE’s association with high quality made it difficult to allow different pricing models within different sectors and customer segments. A “low-cost” service with the core brand could harm the high-quality image. CEWE realised that other brands were necessary for various B2C and B2B segments. Combined with the availability of capital, CEWE decided to enhance its organic growth with adjacent growth based on acquisitions to strengthen its competencies and enter new market segments. Introducing new or takeover of existing brands led to a portfolio of multiple brands, addressing heterogeneous customer segments. The various acquisitions enabled new value propositions, addressed new consumer segments, and employed different pricing strategies in the commercial sector without harming the core brand and its association with high quality. For example, CEWE acquired *Cheerz* in 2018 and *White Wall* in 2019. *Cheerz* is the market-leading photo printing app in France, Spain, and Italy and allows the company to address a new customer group: the millennial generation.

To foster value creation, CEWE used its newly developed competencies from previous integrations (e.g., *diron* 2008) to integrate and scale new companies. At

the same time, CEWE created synergies: “This [the exchange with acquired companies] also has something beneficial for CEWE. We are also learning how to be successful.” (ID 7). Acquisitions were not fully integrated to use decentralised competencies: “If you meet someone who is more professionally positioned, maybe only for a certain market segment, I think it would be fatal to make the mistake [...], to integrate these companies 100 percent. But rather exchange the know-how [...]” (ID 5). Further fostering the full potential, CEWE used the same principle as in 2002 and introduced “digital circles” within so-called “expert circles” to regularly discuss specific topics and exchange experiences beyond the boundaries of the different brands and organisational units, extending these already existing routines.

CEWE set up a dedicated campus for artificial intelligence and mobile technologies, the Mobile & Artificial Intelligence Campus (MAIC), to keep pace with technological developments. The portfolio moved towards software and mobile solutions (according to a company presentation from 08/2020: mobile, cloud, AI, smart data, and voice control). Figure 4 summarises the episodes.

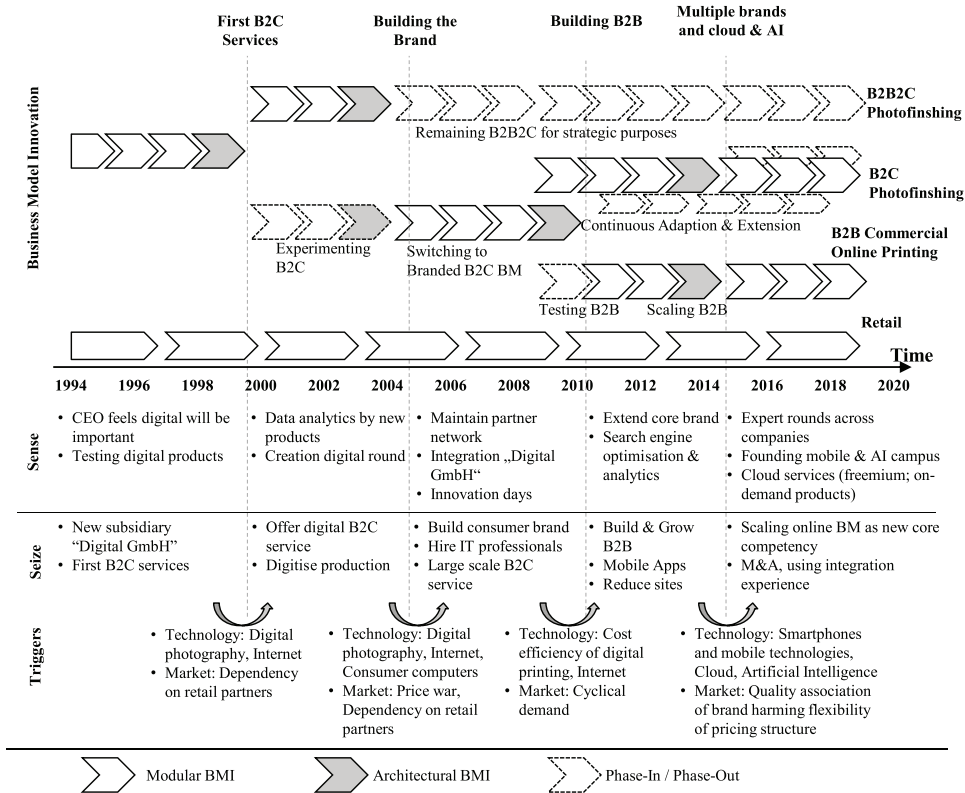


Fig. 4. The interplay of CEWE's business model innovation and dynamic capabilities.

A Process Model of Business Model Innovation and Dynamic Capabilities

Development, Utilisation, and Routinisation of Dynamic Capabilities by Business Model Innovation

In this chapter, we show how CEWE developed and utilised various dynamic capabilities. We observed different routines that developed over time to build and maintain dynamic capabilities, which proved helpful for CEWE's journey in continuously innovating its BMs.

First, **developing separate organisational units** can support introducing new BMs into an existing organisation (Blindenbach-Driessen and van den Ende, 2014; Bock *et al.*, 2012). CEWE used its low-margin and low-revenue hardware business to understand new geographical markets and its customers as a foundation to develop the brand in priorly unknown regions: *"We wouldn't have known [...] through which channel [...] to offer our product"* (ID3). The hardware business, a unit largely independent from the core business, is used to understand the environment and the customers on a small scale and a specific niche, following ambidextrous goals (Kortmann, 2012; Lukoschek *et al.*, 2018). Further, CEWE founded a digital subsidiary to test new, technology-based BMs and develop new competencies. Once the new BMs ran and grew, the separate unit was reintegrated and evolved into the core business. Integrating different organisational units can be challenging for organisations from information technology (Hasselbring, 2000; Ricciardi *et al.*, 2018) and a cultural perspective, especially if a rather explorative team becomes part of exploitation. In our case, the dynamic capability of developing separate organisational units gives rise to BMI. The outcome of its utilisation for CEWE was the ability to focus BMI on dedicated customer needs to offer more customer-focused BMs, and to test services based on new technology (e.g., the internet in the 1990s) outside the core business.

Second, **fostering open communication and cultural change** evolved into a crucial dynamic capability to allow and give rise to BMI. To introduce new BMs, managers need to promote an appropriate organisational culture (Teece, 2017). CEWE relied heavily on different routines that evolved over time to build this capability. The organisation introduced different formats for open discussions on innovations, including various departments and hierarchies ("digital circle", later changed to "innovation circle", "innovation days", and "expert circle" across brands) that take place regularly, from weekly to yearly. These not only served as a fountain for new ideas, and thus gave rise to various BMI, but improved company-wide commitment towards the decision to perform a certain BMI, i.e., supporting it: *"But I would also say that the major guidelines in the company [...] go [...]"*

also [through] these innovation circle” (ID 2). Further, tools supported a growing cultural change among employees: “[...] If someone at the conference table said: ‘Well, and what do we do now with the photobook?’ Then he was immediately asked to pay two euros into the cash box right away because it’s called a CEWE photobook” (ID 1). These routines support cultural change and commitment and, in turn, support alignment, e.g., of BMs and brands (Logman, 2021), which CEWE had to ensure when turning away from the white label.

Third, **enabling and governing bottom-up leadership** supported various BMIs for CEWE. The know-how is developed in different units and sites, enabling a mix of top-down and bottom-up governance: “we still also have very strong decentralised competencies and don’t just wait for the headquarter” (ID 2). Additionally, companies acquired by CEWE were not fully integrated, but rather routines such as expert circles allowed knowledge exchange and adoption of processes. In technology-driven enterprises, distributed competencies can support innovation (Granstrand *et al.*, 1997). This bottom-up governance enables all employees to engage in innovative activities, fostering BMI on all levels. It translates to a strong identification: “And what’s nice is that the voice of the individual from the field also has an impact” (ID 7). Indeed, distributing sensing and seizing through an organisation and all levels can be beneficial and realised by efficient communication and flat hierarchies (Reitzig and Maciejovsky, 2015; Teece *et al.*, 2016). Still, strong leadership in the CEO role (“And then, with our CEO, came the clear focus on brand strategy [...]” (ID 5) as well as in general in the management supported the various BMIs as well as a cultural change. Continuity in the management provided stability for the multiple changes—since 1961, CEWE has appointed only its fourth CEO. Strong leadership skills can translate into organisational identification and cultural change, supporting the transition to a new BM (Teece, 2018).

Fourth, bred by BMI, **building competencies internally** evolved to a crucial capability. CEWE initially lacked know-how in specific technologies and required external support for its first digital products, like the *PhotoIndex*, and the subsequent BMIs allowed by these, like an aftersales business by the *PhotoIndex*. Through these BMIs, CEWE realised they needed to build competencies internally: “But we also quickly realised that we have to have these core competencies in-house, and we cannot outsource them. We have to develop them ourselves” (ID 1). By hiring professionals with new skill sets, CEWE nourishes the development of know-how. Developing technological competencies in-house can benefit innovation outcomes (Huang, 2011). Still, collaboration with research can broaden an organisation’s horizon—to keep open, CEWE opens its own “mobile and AI campus”. In our case, BMI fosters the development of competence-based capabilities internally. For CEWE, these capabilities resulted in the possibility to generate

data for and the ability to analyse consumer behaviour and further allowed to offer after-sales BMs.

Fifth, **fostering mutual partnerships** supported, in the case of CEWE, various BMI and simultaneously was further built by these BMIs. Despite switching to a brand and mainly B2C BM, CEWE wanted to keep its partners: “[...] *the retail partner must also win. If they lose, [...] we will lose them as well*” (ID1). In CEWE’s case, even though entirely switching to direct sales would have been possible, the partners themselves served as a source of innovation and fostered various BMI. At the same time, the partnerships were crucial in establishing the brand at the point of sales, and, by these learnings, the BMIs reinforced the utilisation of strong and mutual partnerships. Regular and dedicated partner meetings and events proved helpful.

Sixth, CEWE is **fully incorporating technological innovation** into its core competencies and core business. This capability was developed by various BMIs by learning how to integrate technology-based innovations iteratively in various steps, from testing the first digital products to founding own units and up to dedicating a whole AI campus to it. A digital subsidiary is founded, later incorporated, and responsible for an entirely new BM. Digital channels have become the primary means of communication, and digital services enhance CEWE’s portfolio. By 2013, the BM itself had a dedicated own subsection in the annual reports. By 2020, CEWE speaks of “online BM” as a core competency (CEWE, 2020), having performed various BMIs that led to this competency. Speed in anticipation and adaptation of the BM by technology is vital: “*Especially in the current time, the speed of change or adaptation of the business model is absolutely necessary to stay in business*” (ID 5). This capability enhanced CEWE’s ability to realise when a new product or service was necessary as consumer analysis was possible, allowed to create individualised products, open new sales channels, and offer entirely new BMs, such as cloud storage.

A process model of continuous business model innovation and dynamic capabilities

Building and utilising dynamic capabilities with modular business model innovation

From our case study, we observe different processes during the continuous innovation of the BMs. We first focus on single episodes, i.e., before an architectural BMI occurs to introduce a new BM. Two key processes occur within one episode: First, modular BMI builds dynamic capabilities. Triggers are technological developments (technology) and market developments (external). For example, the advent of digital photography and subsequent digital printing technology triggered small innovations in the first and second episodes, such as introducing a *Photo CD*

to digitise pictures or the *PhotoIndex* to increase the re-ordering of pictures. These innovations led to a slight adaptation or extension of CEWE's existing BM but did not architecturally change it. However, with these innovations, new dynamic capabilities are developed. In the case of CEWE, the capability to integrate technology is built and the capability to develop separate organisational units is used.

Second, the newly developed dynamic capabilities are utilised, supported by routines, within further modular BMI, e.g., when technological know-how can be leveraged to adapt the existing BM. For example, with the introduction of the *Photo Kiosk*, CEWE learned how to install and use a touchpoint at the PoS and how consumers interact with it. Out of these learnings, CEWE advanced to introduce the *PhotoMaker*, enabling new customer channels and new value propositions. These modular BMIs further increased the existing ones and built up new dynamic capabilities, for example, how to transmit, manage and use digital data within the production process. With the *PhotoIndex*, the capability of integrating digital technology was built and utilised in BMI by analysing consumer behaviour and offering a BM that taps the after-sales potential.

Dynamic capabilities enabling to perform architectural business model innovation

Another sub-process unfolds to offer a new BM, i.e., architectural BMI. Compared to the prior process, now a mix of different triggers and the availability of developed dynamic capabilities enable an architectural BMI. The outcome of this change, which is relatively more extensive compared to the modular innovations within one episode, is a new BM.

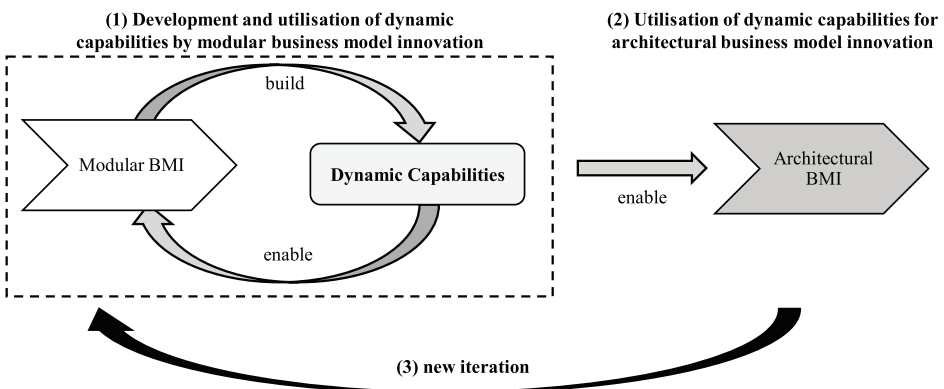
For example, during the second episode, CEWE introduced an entirely new B2C BM, offering a labelled, end-consumer product, performing the activity of an architectural BMI. Different triggers led to this activity: price pressure and bargain power with retailers (market), rising sales of digital cameras and increasing technological advancement of complementing products (technology), and the advent of the internet (technology). Further, CEWE developed different capabilities by the various modular BMIs performed priorly: CEWE realised new services are necessary with the rise of digital cameras and computers; tested internet-based services; realised individualised products' rise in popularity with consumers, and developed products to generate digital data and skills to analyse it to understand consumers' behaviour. The combination of these triggers and the possibility to utilise the developed dynamic capabilities enabled CEWE to perform the architectural BMI. The outcome was an entirely new BM, with a branded product being sold directly to consumers *via* own (internet-based) channels (B2C) as well as using the existing partner network (B2B2C).

A process model of continuous business model innovation and dynamic capabilities

A more significant process becomes imminent when considering CEWE's BMI over the whole analysis period, incorporating the priorly described sub-processes. Modular BMI adapts one or few components of an existing BM. These activities build new or enhance existing dynamic capabilities. Routines support this development. These dynamic capabilities are utilised within further modular BMI, leading to a cycle of building dynamic capabilities by modular BMI and utilising dynamic capabilities for further modular BMI. At some point in time, technology and market triggers come together with developed capabilities, allowing to perform an architectural BMI. The priorly developed dynamic capabilities are used to introduce a new BM.

For example, in the second episode, CEWE developed various capabilities regarding technology, understanding consumers, and analysing its environment. Combined with market and technology triggers, CEWE introduced a new BM, directly addressing consumers with digital sales channels and an entirely new and branded product, the *CEWE Photobook*.

The process model in Fig. 5 shows how modular BMIs build dynamic capabilities, which in turn enable further modular BMIs. Thus, modular BMIs build dynamic capabilities and utilise them simultaneously. At some point, the built dynamic capabilities enable to perform an architectural BMI. A mix of external triggers and the developed dynamic capabilities lead to the decision to perform an architectural BMI. Once an architectural BMI is performed, a new iteration of developing and utilising dynamic capabilities by modular BMI starts.



(1) Modular BMI builds dynamic capabilities, which in turn enable further modular BMI, until an organisation has developed sufficient dynamic capabilities to (2) perform an architectural BMI. The organisation is equipped to change its entire BM(s), leveraging their capabilities. After accomplishing an architectural BMI, (3) a new iteration begins of building up dynamic capabilities before a new architectural BMI is possible

Fig. 5. A process model of continuous business model innovation and dynamic capabilities.

Discussion

Organisations need to keep up with the pace of technological development and changing environmental conditions. With BMI, organisations can leverage technology and achieve a competitive advantage. However, research is missing insights on how continuous BMI unfolds in detail as a series of activities and what role dynamic capabilities take in that process. Building on existing BM research and dynamic capabilities, we build on a longitudinal study to introduce a process model, elaborating on continuous BMI as a mixture of modular and architectural BMI activities. The model shows the role dynamic capabilities take within that process, being outcome and antecedent. Our model explains how BMs are continuously innovated by building and utilising dynamic capabilities with modular BMI and leveraging developed capabilities with architectural BMI. Further, we identify dynamic capabilities and show routines that enable practitioners to apply the model and continuously innovate their BMs.

Our model explains how dynamic capabilities are developed and leveraged and underpins the importance for organisations to foresee certain developments to leverage the potential of dynamic capabilities, a yet under-researched area (Fergnani, 2020). Further, the model shows how modular BMI can support developing dynamic capabilities. The usefulness of the dynamic capabilities framework within BMI was shown by prior literature, using it as a lens to study antecedents (Foss and Saebi, 2017; Teece, 2017). Randhawa *et al.* (2020) showed how dynamic capabilities are antecedent to continuous BMI. Our results support that view but further extend the understanding of dynamic capabilities simultaneously as antecedents and outcomes of continuous BMI. Further, the model and its constructs relate to other topics in BMI research. For example, Demil and Lecocq (2010) introduce the label of dynamic consistency in the evolution of BMs, which is an emergent and deliberate change of BMs. This capability elaborates on the balance between a BM's performance and the continuously changing environment influencing a BM. In addition to emergent change, our model drills down on conscious decisions and demonstrates how emergent change is translated to conscious decisions and how these decisions innovate BMs continuously. The environment is an external trigger, which is leveraged by dynamic capabilities.

Theoretical contributions are threefold. First, we contribute to the literature on dynamic capabilities. We provide explicit dynamic capabilities and show how these can be built, how they are utilised, and which outcomes can be achieved. Our results support how routines build and manifest capabilities, e.g., weekly innovation circles enabling a cultural change or play-like communication tools (*"pay two euros into the cash box"* (ID1)). Further, our case shows that building capabilities by learning across organisational boundaries is possible. However,

for Cewe for CEWE, only to a certain extent, as integrating knowledge was central. With that, we answer calls from research for the development of dynamic capabilities to proceed through typical stages over time (Fischer *et al.*, 2010; Schilke *et al.*, 2018). Our model offers one possibility of how these capabilities are developed with BMI. Further, we show how dynamic capabilities are utilised by continuously engaging in BMI and, by that, explicitly show repeatable mechanisms for organisations (Schilke *et al.*, 2018; Vial, 2019). For example, the capability of enabling and governing bottom-up leadership is utilised by a balance between stability in the CEO position and strong decentralised competencies, which are regularly aligned by formats such as innovation days. Contradictorily, we could not observe path-dependencies in the utilisation of capabilities. Regarding outcomes, we observed different outcomes when utilising dynamic capabilities. Some examples include a strong identification of employees with an organisation, the alignment of brands and business models, an increased speed to adapt, the possibility to offer after-sales BMs, and the ability to analyse customer behaviour to achieve competitive advantage by customer-focused business models. The capability of developing and utilising separate organisational units allows focusing BMI on more dedicated customer needs and results in more customer-centric business models.

Second, our results explain the relationship between continuous BMI and dynamic capabilities. We highlight the suitability of the dynamic capabilities framework to study continuous BMI and clarify how dynamic capabilities can be developed and utilised by BMI. The developed model shows dynamic capabilities are developed with modular BMI. We further show how dynamic capabilities are antecedent to BMI but simultaneously are the outcome of a continuous process. We show how firms can use modular BMI to build dynamic capabilities and utilise dynamic capabilities to enable architectural BMI. With that, we answer calls to study dynamic capabilities concerning BMI (Foss and Saebi, 2017; Schneider and Spieth, 2013; Teece, 2017). We enrich research on BMI and dynamic capabilities and demonstrate how both enable and build on each other.

Third, for research on BMI, we show how continuous BMI unfolds in detail over a long period. We explain how modular BMI develops dynamic capabilities and how these, in turn, enable architectural BMI. Further, the model shows how various modular BMs occur before another architectural BMI is possible. Therefore, introducing a new BM or architecturally innovating an existing BM requires some stability for the organisation, and not too many new BMs should be offered within a short timeframe. With the model, we provide antecedents to BMI, but further show how dynamic capabilities can simultaneously be the outcome of BMI. Further, we demonstrate how different dynamic capabilities can support

continuous BMI to achieve a long-term competitive advantage. We follow calls to advance research on BMI and its drivers (Foss and Saebi, 2017, 2018).

For practice, our results guide organisations to navigate their BMI journey successfully. We show how organisations can leverage their capabilities in continuous BMI. Further, we show how capabilities can be developed in small steps, engaging in modular BMI. We identify dynamic capabilities that support firms to innovate their BMs and show routines to build and manifest these capabilities. Additionally, the narrative that extends through three decades will help organisations to better grasp the effects of time in their continuous innovation journey. The rich narrative gives insights into different aspects, such as M&A, brand building, or incorporating of digital technology, which supports practitioners to reflect on their situation.

This study has its limitations. This paper aims to analyse a longitudinal case in-depth over 27 years. The generalisability of single-case studies is partly constrained (Yin, 2018). Further, interviewees, in part, had to deliver retrospective accounts of events. We mitigated by additionally analysing company reports and archives to triangulate our insights. Additionally, our two-folded coding procedure involved a descriptive part in assessing BM components and an inductive part to understand why CEWE performed certain activities, how these activities unfolded, and to which outcomes these activities led. By nature, this coding is partly subjective. We mitigated these issues using the principles of constant comparison and iterative coding along with the triangulation of heterogeneous data sources. Regarding the derived model, we demonstrated the connections between our model and constructs used within the extant work (Bacharach, 1989). Still, different contextual conditions apply, which need to be demonstrated (Suddaby, 2010). The generalisability of a model derived from a single case study is limited by the nature of the research approach. Further, our model cannot elaborate on the cognitive decisions related to BM choices nor formal conceptualisations of BMs. Additionally, dynamic capabilities can be path-dependent. The dynamic capabilities present in our study focus on our case, and their generalisation within a model does not reflect this path-dependency, as we could not observe it.

Future research can use our results to study further the interdependence of continuous BMI and dynamic capabilities. Analysing firms that use several BMs in parallel will enable investigating spillovers and synergies between innovations of different BMs. Future research can also focus on the timing and timespan between BMI to develop and enhance dynamic capabilities. We expect there can be too much acceleration within the process of BMI, which could turn out harmful in the end and harm the balance of a BM, and requires further research. Studying additional cases can provide a suitable database to test and extend our model. Further, we used dynamic capabilities as a lens to study continuous BMI. Other theories

could be suitable as well and should be determined within future research, which, however, are not suitable for our research endeavour. Last, we follow an existing and widely accepted distinction between modular and architectural BMI. Future research should analyse the differentiation of modular and architectural BMI and what these types entail, building on empirical research strategies.

Conclusion

To remain competitive in dynamic markets characterised by fast-changing customer demands and a high pace of technological progress, firms need to adapt to their environment and stay ahead of the competition (El Sawy and Pereira, 2013; Tallon *et al.*, 2019; Teece, 2017). Continuously innovating BMs is necessary to leverage technological progress and can be a successful survival approach in a demanding competitive environment, but it remains a complex challenge for firms (Foss and Saebi, 2017; Massa *et al.*, 2017). Dynamic capabilities elaborate how firms ensure long-term success by continuously adapting to the environment and transforming. Yet, how continuous BMI unfolds and how dynamic capabilities support it remains understudied.

This study sheds light on these challenges. We derive a process model of continuous BMI based on a single, longitudinal, in-depth case study of CEWE, a European player in the photofinishing industry. CEWE has survived in a challenging industry by continuously leveraging technology and innovating its BMs and is now a multi-brand, market-leading organisation. Within the 27-year analysis period, we show how modular BMI leads to more significant architectural BMI and entirely new BMs. We derive a process model on continuous BMI. It explains how modular BMI builds dynamic capabilities and how architectural BMI utilises them. The model elaborates the role dynamic capabilities take in that process, both the outcome *and* the antecedent of BMI. It further displays how continuous BMI unfolds in detail. The dynamic capabilities presented show how practice can shape this process successfully and how technology becomes deeply integrated into BMI.

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Appendix A.1. Definitions of Core Constructs Used
Throughout this Paper.

Table A.1. Core concepts used throughout this paper.

Dynamic Capabilities	Dynamic capabilities refer to a firm’s ability to integrate, build, and reconfigure internal competencies to address changes in the business environment (Kump <i>et al.</i> , 2018; Teece <i>et al.</i> , 1997; Teece, 2007).
Business Model	An articulation of how a business creates, delivers, and captures value (Osterwalder and Pigneur, 2010; Teece, 2017).
Business Model Innovation	“Designed, novel, nontrivial changes to the key elements of a firm’s business model and/or the architecture linking these elements” (Foss and Saebi, 2017).
Modular Business Model Innovation	Innovating one or few components of a BM, i.e., evolutionary and focused BMI (Foss and Saebi, 2017).
Architectural Business Model Innovation	Changes in the overall business model by innovating several BM components simultaneously, i.e., adaptive and complex BMI (Foss and Saebi, 2017).
Continuous Business Model Innovation	An ongoing process constituted of various activities to innovate one or several components of a BM repetitively over time.

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