

Advancing Circular Transformation in the Food Industry: Leveraging Dynamic Capabilities for Business Model Innovation

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Abstract

The conventional linear economic model of take-make-use-and-discard has long dominated business operations. However, the emergence of Circular Economy (CE) paradigm in recent years proposes a sustainable shift from extractive behaviour. This paper investigates the crucial role of dynamic capabilities in CE business model innovation. Through twenty-three interviews with senior management of the companies, it examines how sensing, seizing, and reconfiguring capabilities enable firms in adapting to changing business ecosystems. The study enriches dynamic capability theory by identifying three key contributions: crowdsourcing, attainment of business and environmental accreditations, and supply chains redesign. Participating organisations demonstrate a strong commitment to environmental sustainability, employing innovative approaches such as upcycling and closed-loop supply chains to create economic and environmental value. Organisational capabilities such as experimentation and collaboration are found to be vital for fostering innovation. The study underscores the necessity for businesses to embrace CE principles, disrupt their business models, and develop capabilities.

Keywords: business model innovation; circular economy; dynamic capability; reconfiguring and transforming; sensing; seizing

Track: Organisational Transformation, Change and Development
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1. Introduction

Two major forces, industrial revolution and globalisation have largely driven the business world (Allen, 2003; McDonough & Braungart, 2002). The linear economic model of take-make-use-and-dispose has been the mainstream operating model in the business ecosystems for centuries. It is stated that if organisations pursue similar paths to the development, humans will need two planet Earths by 2030 and three by 2050¹. The changing global economic and ecological landscape have pushed organisations to reformulate corporate strategies and adapt their business models (BMs) in line with the circular economy (CE) principles (EMF, 2013; Schulte, 2013; Esposito, Tse and Soufani, 2018; Pieroni, McAloone and Pigosso, 2019a, 2021; Reim, Sjödin and Parida, 2021; Sehnem *et al.*, 2022).

CE is defined as “*an economic system that is based on business models which replace the ‘end-of-life’ concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes, thus operating at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation and beyond), with the aim to accomplish sustainable development, which implies creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations*” (Kirchherr, Reike and Hekkert, 2017). Recent years have witnessed a surge in CE literature (Diaz Lopez, Bastein and Tukker, 2019). However, there is still lack of studies on this phenomenon in organisation sustainability and management literature (Murray, Skene and Haynes, 2017). Ghisellini *et al.* (2016) argue the adoption of the concept is still at its early stage, specifically at organisational level (micro-level). Khan, Daddi and Iraldo (2020) contend that firms lack proper implementation of CE concepts into their organisational strategies, business models, and operations. Whereas Linder and Williander (2017) explores the inherent uncertainties attached with BM adaptation and causes of entrepreneurial firms’ reluctance. Organisations are encountered with several challenges in implementing CE models (Geng and Doberstein, 2008; Hopkinson *et al.*, 2018; Kirchherr *et al.*, 2018; Ormazabal *et al.*, 2018; Sousa-Zomer *et al.*, 2018; Vermunt *et al.*, 2019; Guldmann and Huulgaard, 2020).

Scholars suggest firms need to reconfigure their existing resources and develop capabilities to overcome sustainability challenges (Felin and Powell, 2016; Bartocci *et al.*, 2017). Lacy and Rutqvist (2015) argue the success of BM in the CE context hinges upon developing capabilities. Without proper capabilities, companies will face unnecessary high costs and risks to timely market their products as the internal and external environment fail to calibrate. Similarly, Fernandez de Arroyabe *et al.* (2021) suggest that CE-related capabilities have a positive effect in driving CEBM innovation.

Pieroni *et al.* (2019) argue BM approaches have become heterogeneous and thus rely on a multiple theoretical background, which deviate from traditional BM logic. Pieroni and co-authors also assert that the emerging nature of BMI in the CE context needs further empirical exploration. Seles *et al.* (2022) systematic review has identified seven research gaps. The authors stated future research should include various forms of organisations (SMEs, large corporations, family-owned businesses, public companies etc.) to generate in-depth knowledge of the phenomenon to help organisations transform to circularity. This was the departure point for our paper and a gap to be filled.

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To fill the gap, we employ dynamic capability perspective (Teece, Pisano and Shuen, 1997; Teece, 2007) with a specific focus on *sensing, seizing, and reconfiguring* (Teece, 2007) as integral part in designing and implementing CEBM. The theory been used in several strategic management (Eisenhardt and Martin, 2000; Schilke, 2014), entrepreneurship (Zahra, Sapienza and Davidsson, 2006), and BMI for sustainability and CE researches (Beske, Land and Seuring, 2014; Felin and Powell, 2016; Inigo, Albareda and Ritala, 2017; Kabongo and Boiral, 2017; Khan, Daddi and Iraldo, 2020a; Heider *et al.*, 2021). However, the area is still open for further exploration due to the lack of empirical research (Seles *et al.*, 2022).

Due to the interdisciplinary nature of CE and BMI, we argue there is no specific theoretical construct to examine firms' transformation toward a CE model, and that the area is still fragmented, and to a great extent open for theoretical formulation and integration. Because the BMI process is greatly linked with business strategy (Richardson, 2008; Casadesus-Masanell and Ricart, 2010; Teece, 2010, 2018; Saebi, Lien and Foss, 2017; Bigelow and Barney, 2021), we argue integrating BMI, particularly CEBM, into strategic management theories would not only enable firms toward novel strategic direction but also primarily transform their value proposition, creation, and capture mechanism in accordance with CE discourse. We aim at leveraging dynamic capabilities for BMI in CE context. We conducted twenty-three in-depth qualitative interviews with the senior management of various firms (SMEs, large organisations, family-owned businesses, and social enterprises). The results were then thematically analysed against three broad predetermined themes – *sensing, seizing, and reconfiguring/transforming*. An abductive research approach has been used.

We particularly have investigated dynamic capabilities of the firms in the food industry. This is one of the first studies that investigated food companies at the intersection of BMI, CE, and dynamic capabilities. The choice of the food industry is driven by many reasons. The food system is a significant driver of climate change, biodiversity loss and land use changes, depletion of water resources, and pollution of ecosystem both aquatic and terrestrial (Springmann *et al.*, 2018). It is also responsible for 25% of GHG emission worldwide. It degrades the resources extracted and contributes to water, air and soil pollution. As much as the equivalent of six (garbage) trucks of food (edible) is either lost or wasted every second (EMF, 2019). Likewise, Jurgilevich *et al.* (2016) contends that the current food production and consumption patterns are not sustainable and thus require concrete intervention in business operations (Jurgilevich *et al.*, 2016).

The remainder of the paper is structured as follows. Section two elaborates the existing literature on BMI theoretical constructs, the adopted conceptual approach to accelerate CE transition in organisations, and the dynamic capabilities viewpoints in sustainability and CE literature. Section three describes the research approach and methods for data collection followed by the results and analysis in section four. The findings of the study are discussed in section five with theoretical and practical implications. The paper concludes in section six with some limitation.

2. Literature Review

2.1 Business Model Innovation (BMI): Theoretical Insights

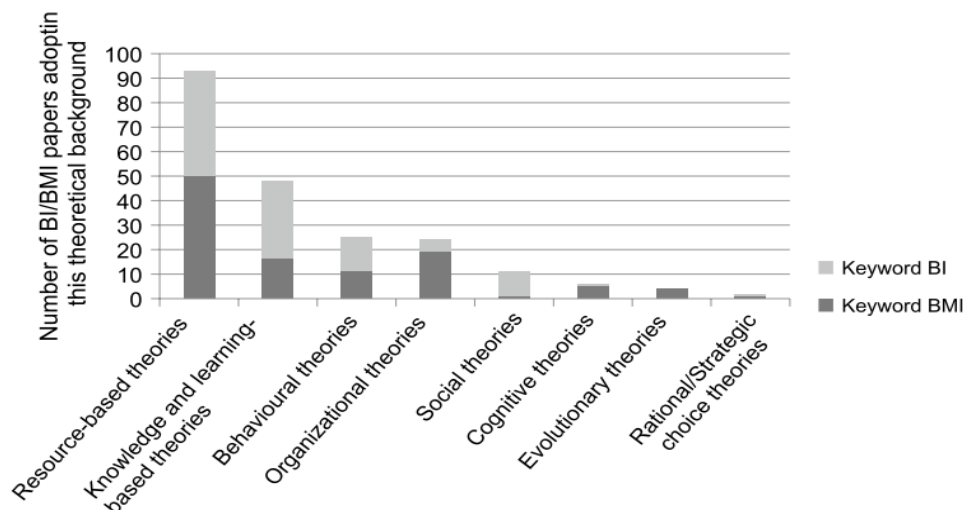
BM research has seen exponential growth since 2000s. However, the complete agreement what BM is still is missing due to variety of its interpretations (DaSilva and Trkman, 2014). The scholarly works by (Amit and Zott, 2001; Chesbrough and Rosenbloom, 2002; Magretta, 2002; Morris, Schindehutte and Allen, 2005; Zott and Amit, 2007, 2008, 2010, 2013; Osterwalder and

Pigneur, 2010; Teece, 2010; Zott, Amit and Massa, 2011) are seminal in the BM research. The field of BM is heterogeneous and progressed incrementally (Foss and Saebi, 2017). Despite various interpretations, scholars have consensus over three prime themes – value proposition, value creation and delivery, and value capture mechanism (Richardson, 2008; Teece, 2010).

Scholars also argue BM discourse lacks a unified theoretical grounding (Teece, 2010; Foss and Saebi, 2017; Loon and Quan, 2021). One of the reasons could be BM is not anchored much in traditional management theory or vice versa (Gassmann, Frankenberger and Sauer, 2016). Gassmann, Frankenberger and Sauer, (2016) categorises BMI research into seven schools with different but overlapping and interconnected theoretical frameworks building on strategic management literature on one hand, and innovation management and technology on the other. The growth of BM research in the last ten years developed into its own discipline that could be regarded as an initial phase in which distinguished schools have emerged. As many as twenty management theories have contributed to BMI research (Gassmann, Frankenberger and Sauer, 2016) as depicted in figure 1.

Foss and Saebi (2017) contend that BMI construct is deficient of clarity in terms of antecedents, contingencies, and outcomes, which then makes its operationalisation and measurement difficult. Authors stated four research streams in BMI domain: 1) conceptualisation and classification of BMI; 2) BMI as a process (e.g. importance of leadership, capabilities and learning mechanisms); 3) BMI as an outcome (e.g. identifying and describing innovative BMs); and 4) BMI and the firm performance. They further argue BMI can be advanced by incorporating theories from innovation, complexity, entrepreneurship, dynamic capabilities, and open innovation theory to overcome the gaps in BMI (Foss and Saebi, 2017).

Figure 1 **Management Theories in BMI Research**



(Gassmann, Frankenberger and Sauer, 2016)

Loon and Quan (2021) examined how and why BMI occurs, and what mechanisms are involved in this process. They argued for a mechanism-based theory and identified six mechanisms – system perspective and extra-cognition, dynamic ambidexterity including organisational capabilities, modularisation for reconfiguring and paradox heuristics, and cooperative mutuality alliances that explain the occurrence of BMI in terms of process, antecedents, degree of change,

resilience, and impact. They argue due to divergent conceptual approaches in BMI and its various contextual application, BMI could be understood as a ‘metatheory’, which might be considered as a ‘theory of theories’ (Robledo 2014 cited in Loon and Quan 2021). The authors further argue it is unnecessary that BMI always occurs due to exogenous factors such as institutional and regulatory changes, rather it is conceived and carried out more endogenously – internally driven, which, in other words, could arguably be called an entrepreneurial activity.

BMI is different from other forms of innovation such as product, process or even organisational in the sense that BMI reconfigures existing organisational design, industrial structure, customer base, competition rules, and the value chain of a firm (Mezger, 2014a). Many BM innovators across industries such as Skype, Amazon, Uber, Google and Airbnb, all have revolutionised their sectors by overcoming the traditional logic of industry. These companies have showed that the capability to sense and seize opportunities could revolutionise not only the industrial mechanisms but also the global economies (Felin and Powell, 2016). Nonetheless, BMI is not restricted to these gigantic organisations of Silicon Valley. With the acceleration of CE concept and practices in energy, food, health care, construction and manufacturing sectors the importance of BMI has even grown bigger with an emphasis on CEBM (Geissdoerfer *et al.*, 2020). Firms such as *Patagonia* and *Mud Jeans* in clothing, *Bio-bean*, *Winnow Solutions*, *Toast Ale* in the food & drink, *Caterpillar* (machinery manufacturer for construction), *Desso* and *Interface* (carpet manufacturing), *Splosh* (cleaning products), *Netflix* and *Spotify* in digital films and music, *Ecovative Design* (Biotech and packaging), all are compelling cases of BMI aligned with CE discourse.

Several academic and practitioners suggest that transforming to sustainable and CE business models would not only reap superior economic returns for the firms but also such initiatives would make companies resilient, green and environmentally sustainable (EMF, 2013; Schulte, 2013; Accenture, 2014; Bocken *et al.*, 2014; EMF, SUN and McKinsey, 2015; Lacy and Rutqvist, 2015; Sjödin *et al.*, 2020; Weaven *et al.*, 2021; Antonioli *et al.*, 2022; Kennedy and Linnenluecke, 2022). However, many of these studies lack theoretical underpinnings. That’s because CE lacks theoretical unification because of its interdisciplinary nature (Murray, Skene and Haynes, 2017; Merli, Preziosi and Acampora, 2018; Pieroni, McAloone and Pigosso, 2019). The same we argue for CEBMs.

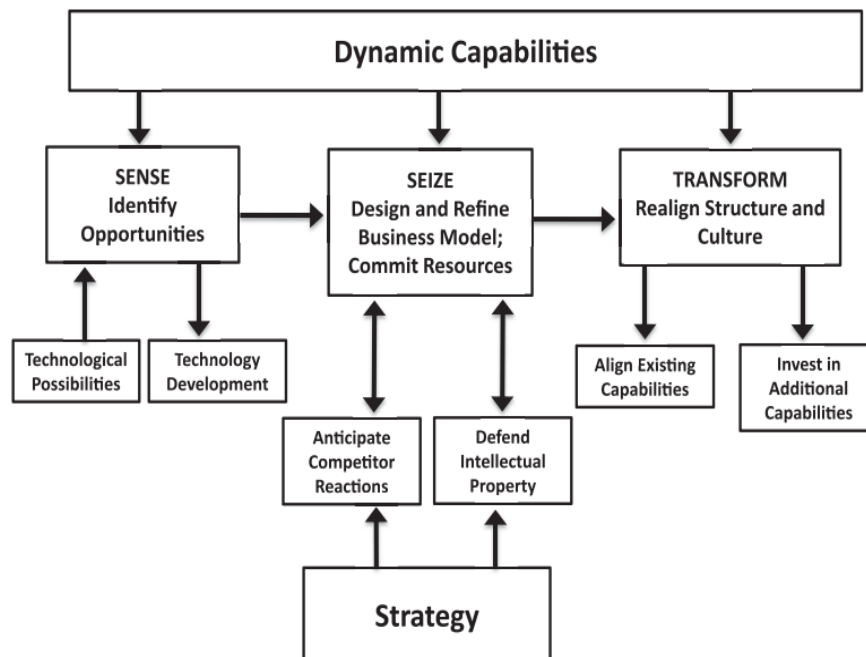
2.2 The Theory of Dynamic Capabilities

The concept of Dynamic Capabilities is an extended version of resource-based view (RBV) of the firm (Teece, Pisano and Shuen, 1997), which emerged as a prominent theory for a firm’s competitive advantage. Dynamic capabilities are the subset of firm’s capabilities that enable an organisation to devise novel products and processes, and effectively adapt to evolving external conditions (Teece, Pisano and Shuen, 1997). Although the theory did not explicitly explore business models until very recently (e.g., Teece, 2018) but it mentions how firms can create and capture value through innovative ways. As Teece, Pisano and Shuen (1997) argue “*winners in the global marketplace have been firms that can demonstrate timely responsiveness and rapid and flexible product innovation, coupled with the management capability to effectively coordinate and redeploy market positions*” (p.515). Examples of such value creation and innovativeness may include strategic decision making, product development, knowledge & capabilities creation and transfer, and alliance formation (Eisenhardt and Martin, 2000).

In a fast-changing global competitive business environment, only difficult-to-imitate resources such as knowledge and tangible assets would not suffice, therefore, it is imperative for organisations to develop and sustain dynamic capabilities i.e., specific skills, procedures, processes, disciplines, decision rules, organisational structures that undergird corporate-level sensing, seizing, and reconfiguring (Teece, 2007). Teece (2007) classifies dynamic capabilities into three dimensions as 1) sensing and shaping opportunities and threats, 2) seizing opportunities, and 3) reconfiguring and transforming. These can be achieved through “*the effective combination of internally and externally generated inventions; efficient and effective technology transfer inside the enterprise and between and amongst enterprises; the protection of intellectual property; the upgrading of ‘best practice’ business processes; the invention of new business models; making unbiased decisions; and achieving protection against imitation and other forms of replication by rivals*” (p.1320).

According to Teece (2018), dynamic capabilities, business models, and business strategy are interdependent. Dynamic capabilities assist organisations to shape their business model design. Since business model influences organisation design, it influences dynamic capabilities to place bound on specific strategies. The design, improvement, execution, and transformation of business model are the output of high-order dynamic capabilities. Teece further argues dynamic capabilities framework is a multidisciplinary model of the firm that reflects the interdependence. Dynamic capabilities and corporate strategy combine to form and improve a defensible or innovative business models (Teece, 2018). A simple depiction of the interplay between business model, strategy and dynamic capabilities shown in figure 2 below.

Figure 2 Schema of dynamic capabilities, strategy and business model



(Teece, 2018; based on Teece (2007))

Building upon Teece’s (2007) framework, our objective is to investigate how organisations sense, shape, and seize innovative business opportunities while avoiding threats, as well as how

they adapt their activities to transform into innovative business entities. This study addresses the following research questions.

RQ: How do the dynamic capabilities facilitate circular economy business model innovation process in organisations?

RQ is further broken down into the following smaller questions to accomplish the objective of the study.

RQ1.1 What are the key resources, channels, and activities in a firm to propose, create & deliver, and capture value for the circular economy?

RQ1.2 What practices and managerial processes are followed, and actions taken to seize a circular business opportunity?

RQ1.3. How do organisations reconfigure their existing resource base and business operations in transforming to CEBM?

2.3 Business Models, Circular Economy, and Dynamic Capabilities

The diversity in BMI and CE research shows researchers have employed several theories. Bocken et al. (2014) and Ersoy et al. (2022) apply an integrated approach for sustainable business practices. Perey et al. (2018) and De Angelis (2022) consider a system perspective in investigating CEBM. Freudenreich, Lüdeke-Freund and Schaltegger (2020) contend for a stakeholder approach for sustainable value creation, whereas Hina et al. (2022) proposes an actor-network perspective to counter CE challenges businesses face. Many others (Borland et al., 2016; Annunziata et al., 2018; Hopkinson et al., 2018; Khan, Daddi and Iraldo, 2020; Reim, Sjödin and Parida, 2021; Seles et al., 2022) argue for a capability-based approach for BMI within a CE context. Whilst a few more (Pagotto and Halog, 2016; Blomsma and Brennan, 2017; Lüdeke-Freund, Gold and Bocken, 2019) have suggested industrial ecology (IE) perspectives to examine CE and sustainability-oriented business innovation. Such a diversity is because the CE discourse is interdisciplinary and interwoven with sustainability and other ecological concepts (Geissdoerfer *et al.*, 2017; Winans, Kendall and Deng, 2017).

Wu et al. (2012) contend that a firm could overcome its sustainability challenges by developing dynamic capabilities. Annunziata et al. (2018) state that organisations committed to corporate sustainability needs to recognise and develop managerial capabilities embedded in the enterprise to implement practices, which are the source of organisational competitive advantage. Developing dynamic capabilities are also fruitful for SMEs to overcome some possible disadvantages associated with the size and the age of the firms (Annunziata et al. 2018). Inigo, Albareda and Ritala (2017) explored how organisations develop and draw new organisational and managerial capabilities, processes, and routines to recognise, design and execute BMI for sustainability. Inigo and co-authors emphasised transformative shifts towards sustainability necessitate novel and out-of-the-box thinking, coupled with effective employment of organisational and managerial capabilities. How such capabilities are developed, Kabongo and Boiral (2017) delineate a four-stage process: local experimentation, cross-functional integration, internalisation of operations, and strategic consolidation.

Kabongo and Boiral (2017) investigated capabilities for eco-efficiency and looked at how resource optimisation could be achieved by developing and integrating dynamic capabilities. Their research revealed that eco-efficiency relies significantly on dynamic capabilities in

organisations, which are established through the coordination and integration of innovative routines, competencies, and practices across many functional areas of the enterprise. Specifically, technological innovations and development, adjustments in human resources, control of residual material flows, management of environmental constraints, and networking and marketing emerged as pivotal capabilities fostering industrial ecology practices such as eco-efficiency in firms (Kabongo and Boiral, 2017).

Hopkinson et al. (2018) argue that '*sustained circular economy business practices require managers and practitioners to develop competencies and capabilities*' (p.71). This assertion aligns with Teece's (2014), wherein he posits that dynamic capabilities are key to enterprise overall performance. However, the existing literature on this is scant, indicating further research, particularly in the context of CE for a global scale up (Hopkinson *et al.*, 2018). Therefore, anchoring CEBM, a form of BM (Loon and Quan, 2021), in strategic management would not only offer a theoretical base but also better help organisations execute CE strategies and transform corporate linear embedded structures (Seles et al., 2022).

We have taken a resource-based theoretical stance, emphasising on a firm's dynamic capabilities (Teece, Pisano and Shuen, 1997; Teece, 2007) for two reasons. Firstly, dynamic capabilities of an organisation not only drive and facilitate BMI (Wu *et al.*, 2012; Foss and Saebi, 2017; Saebi, Lien and Foss, 2017; Teece, 2018; Heider *et al.*, 2021; Loon and Quan, 2021; Weaven *et al.*, 2021) but also, they are imperative to a firm's overall performance (Teece, 2014). Secondly, business model and strategy are closely linked with each other (Morris, Schindehutte and Allen, 2005; Casadesus-Masanell and Ricart, 2010; Teece, 2010, 2018; Foss and Saebi, 2017; Bigelow and Barney, 2021). According to Morris, Schindehutte and Allen (2005) '*the business model construct builds upon central ideas in business strategy and its associated theoretical traditions*' (p.728).

To augment the current field of CEBM and contribute to the extant literature on BMI and dynamic capabilities, this study has investigated potential of a firm's dynamic capabilities in facilitating BMI for the CE and aiding businesses in adapting to the changing business and environmental context. Additionally, the research has explored how organisational capabilities such as pollution prevention, product stewardship, and sustainable development can be integrated into the CEBM innovation process by sensing opportunities and threats within CE, seizing those opportunities, and reconfiguring organisation's existing resource base in transforming to novel business activities and processes.

3. Methodology

The research has opted an abductive approach. According to (Richardson and Kramer 2006; Gary 2010), abductive reasoning can be applied to make sense of new or unknown situations from observed facts through inferences. This method has previously been employed by (Stubbs and Cocklin 2008); (Mezger 2014) (Zucchella and Previtali 2018; Khan et al. 2020) in BMI, sustainability and CE related studies. Since abduction accepts existing theories, perspectives, or frameworks, it may improve the theoretical strength of analysing case companies (Zucchella and Previtali, 2018a).

3.1 Case Selection

The purposive sampling technique (Teddlie and Yu, 2007; Campbell *et al.*, 2020) for case selection was followed. We approached businesses that were demonstrating corporate strategic change, actively aligning their BMs with the principles of CE. This involved endeavours such

as novel value proposition, disrupting organisational activities and resources, and organisations were redesigning partnership networks to generate innovative sources of revenue. All selected cases were operating in the food & beverage industry in the UK, encompassing a spectrum of organizational scales ranging from SMEs to large corporations. Various platforms, including websites such as EMF, B-Corp, WRAP UK, WRAP Cymru, Food Innovation Wales, and Business Wales along with connections with industry experts were used to identify CE and sustainability-oriented food companies (Bryman and Bell, 2011). Over 50 organisations were contacted to participate in this study. We received 26 responses and were successful in interviewing 23 senior managers from 23 organisations, one interview from each. It felt logical and reasonable that 23 case firms were enough for in-depth qualitative interviewing and data analysis. The firms included micro-breweries, small farming businesses to medium and large food and drink manufacturers who were involved in CE business model transformation. A description of the companies is given in Appendix A.

3.2 Data Collection

Data collection was undertaken through in-depth semi-structured qualitative interviews adhering to the interview process suggested by (Kvale, 1996). We purposively interviewed the senior management within the case companies as 1) they are responsible for strategic change in organisations (Krause and Miller, 2020), and 2) their capacity to furnish the most accurate insights concerning CE, [business models], and corporate sustainability activities in the firms (Weaver et al. 1999). All the interviews were conducted in England and Wales between September 2020 and April 2022. The participating firms received a schedule and interview guide beforehand. The interview location and time were chosen at the convenience of the participants, but we made sure the environment was without distractions, such as noise, and internet connectivity in case of an online interview. Onsite interviews took place in companies' offices. All the interviews were transcribed manually and coded for thematic analysis. Interview durations varied between 25 and 85 minutes. The participants were encouraged to add further comments at the end of the interview, which resulted in additional insights to the study.

The participants were asked on various aspects pertaining to their engagement with circular economy and sustainability. Questions included inquiries about company's products, their target market, and how internal operations. They were asked on how they were sensing CE opportunities, what resources and capabilities were employed to carry out organisational activities to create value for firms, customers, and the environment. Additionally, the questions also encompassed the internal and external alignment competencies for BMI, as well as inquiries into value capture mechanisms.

3.3 Data Analysis

The research employed a thematic analysis technique. NVIVO 12 was used to store and manage the data set. The qualitative data analysis software facilitated in coding and ensuring rigour (Yin, 2018). While analysing data, at the first step, initial codes were created at sentence level. This process helped in structuring data in categories that were later compared and analysed against the chosen theoretical framework – dynamic capabilities (Langley, 1999). In the second step, we followed (Gioia's, Corley and Hamilton, 2013) methodology, which is structuring of data into first-order concepts and second-order themes.

The first-order concepts were coded against what was revealed by the participants. In the second category, the researcher followed axial coding process and primarily pursued relationships

between first-order concepts to develop second-order themes. This step reduced the data and linked them up with the a-priori theoretical themes – sensing, seizing, and reconfiguring/transforming. That is distilling the second-order themes into aggregate dimensions (Gioia, Corley and Hamilton, 2013). This was done to see if the coded data supported the aggregated dimensions and reflected the case companies' capabilities. The process is shown in figure 3 in the results section.

4. Results and Analysis

4.1 Sensing and Shaping

We identified six micro-foundations of sensing capability, i.e., (a) crowdsourcing, (b) idea generation, (c) market monitoring and scanning, (d) learning, (e) knowledge creation, and (f) proactive approach, see table 1 for summarised results. Crowdsourcing is an important dynamic capability. Engaging in crowdsourcing ideas and preferences permitted the firms to use the collective voice of the customers to influence their business model decisions. The study found businesses were involved in generating novel ideas. As many as 15 out of 23 companies explicitly talked about how they fostered CE and sustainability-oriented ideas by leveraging diverse perspective, involving cross-functional teams within the organisation, conducting regular meetings, and brainstorming sessions, and asking stakeholders (customers/suppliers) for feedback so that firms could offer circular value proposition.

Case companies were involved in market monitoring and scanning in assessing technological developments in their external environment, analysing the competitors' actions, evaluating market trends, understanding customer needs and their changing preferences (Teece 2007).

Organisations were also asked about how learning took place within the organisations and how that was assisting them in innovating their BMs. Teece (2007) identifies various forms of learning capabilities such as experiential learning, vicarious learning, individual and organisational learning. We identified learning occurred in four ways. They are experimentation (testing/piloting), networking, participating in events and programs, and the past experiences and knowledge (path dependencies).

Furthermore, the participating firms were also asked about their knowledge creation activities, specifically in terms of new product development (NPD) and research and development (R&D). As many as 19 businesses exhibited that they were involved in both NPD and R&D activities. R&D was also considered a critical component of knowledge creation process within the organisations. Firms like K-UK and a few others have allocated specific budgets for R&D activities and dedicated teams for such processes.

Figure 3 Process of data structuration.

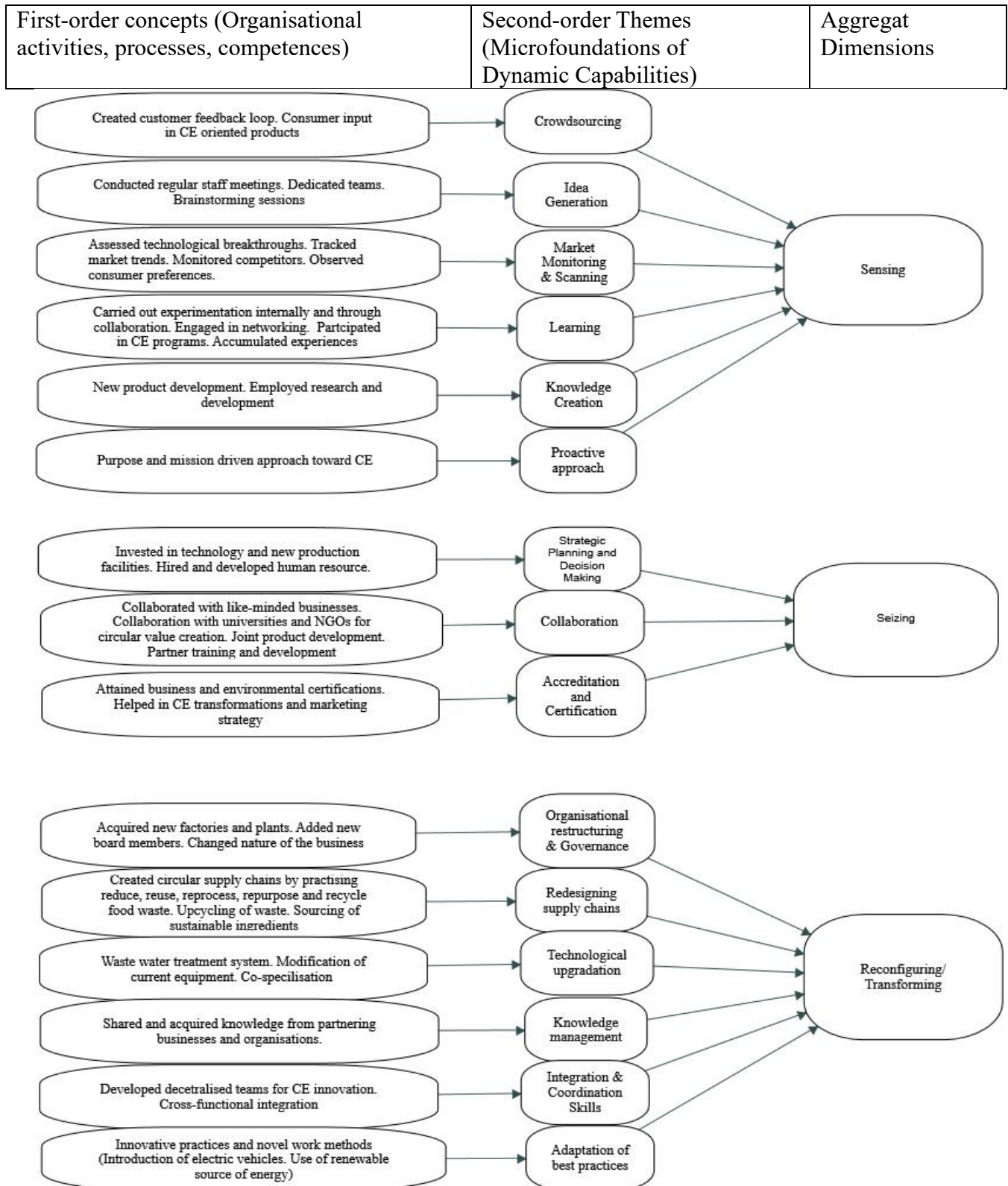


Table 1 Summarised results – Sensing

Microfoundations	Description	Cases	References
Crowdsourcing	Customer feedback, financing sources Crowd-cube etc.	5	7
Idea generation	Brainstorming; regular meetings	15	23
Market scanning and monitoring			
	Assessing technological breakthroughs	4	4
	Monitoring competitors	14	26
	Evaluating market trends	7	8
	Understanding consumer preferences and needs	16	30
Learning			
	Experimentation	8	13
	Networking	3	4
	Participating in CE programs	5	5
	Path dependencies	6	9
Knowledge creation			
	New product development	16	32
	R&D	11	24
Proactive approach	Purpose and mission driven approach toward CE	13	21

Table 2 Sensing capabilities supporting interview quotes.

Microfoundations	Interview quotes
Crowdsourcing	<i>"We are currently on Crowd Cube, that's a community of investors. So, we are going to the crowd investors with an equity model- ordinary shares just kind of inviting people to participate in that journey" (EXK)</i>
Idea Generation	<i>"The attendees in that forum will be sales, marketing, R&D, sourcing and me as the commercial director. So, we have got a pretty good team- a wide variety of departments within the company who are responsible for innovation within the business" (Eco-UK)</i>
Market monitoring and scanning	<i>"We have sustainability people in Germany, in France, in the UK, whose job is to [...] track what competitors are doing." (ID)</i> <i>"The category side [...] have a team of four people, and they are responsible for working with the sales team to influence the retailers and give them insights in terms of the market development, [...] where the opportunities are [...] In the last two or three years, you are seeing a real strong demand and movement for organic, plant-based, or sustainably sourced products. We also have an annual commercial planning process." (Eco-UK)</i>

	<i>"We have always been obsessed with asking for feedback...Our customers and the feedback loop we have created there has really shaped who [company name] is today and it's been really important to us."</i> (TSC)
Learning	<i>"We're trying to get some prototypes in the water...I did a pilot area. We sent marine biologists out there...the amount of growth...different seaweed, and several different species. We had mushrooms growing there with spider crab"</i> (BDR) <i>"We met her through the Impact Hub at Kings Cross last year"</i> (EXK): <i>"I did actually go to an event about the circular economy in Wales. It was with the local council and some government representatives."</i> (BSB):
Knowledge Creation	<i>"We capture the CO2, convert it into algae and [...] we then add the spirulina to the beer, and we sell the beer as a carbon neutral or CO2 saving beer."</i> (BSB) <i>"We have a very strong R&D arm of the business. We invest about 10% of our revenue in R&D."</i> (K-UK)

4.2 Seizing

Once the CE business opportunity was identified, organisations utilised resources and capabilities and developed collaboration for value proposition and creation. We have categorised seizing capabilities into three sub-themes, which focal firms employed while adapting BMs: namely (a) strategic planning and decision making, (b) collaboration, and (c) attainment of business and environmental accreditations. A summary of seizing results is given below in table 3. Each sub-theme is supported by interview quotes as illustrated in table 4.

Table 3 Summarised results – Seizing.

Microfoundations	Description	Cases	References
Strategic planning and decision making			
	Forming alliances and finding strategic partners	7	9
	Investing in new technology and production process	11	23
	Investing in human resource (hiring relevant expertise)	11	16

	Nature of decision making	4	10
Collaboration	Co-evolving and co-value creation (Joint product development, partner-based synergies)	18	51
	Partner training and development	5	5
Certifications	Attaining business and environmental accreditations/certifications (B-Corp, Soil Association, Ecovadis, SALSA etc.)	21	24

Participating organisations demonstrated strategic planning and decision making in several areas, including alliance formation, investing in human resource encompassing hiring & development, adoption of novel technology and production methods, and the modality of internal decision-making processes. Regarding strategic planning and decision-making, seven companies explicitly mentioned how they formed alliances. Fifteen firms showcased significant investments in cutting-edge technologies, production capabilities, and human capital through recruitment and development initiatives.

Table 4 Seizing capabilities supporting interview quotes.

Microfoundations	Interview Quotes
Strategic planning and decision making	<i>"Some of the changes we've made, first of all, to bring in packaging innovation role; second is to bring in regional sustainability representatives to understand what's happening in different places." (ID)</i> <i>You have got to have the reprocessing technology to turn them (coffee wastes) into your final product, and nobody has done this with coffee grounds before. We have the renewable heat incentive, [...] that's a good way of funding our drying process." (BB)</i> <i>"You will find [product name] in EasyJet airlines. You will see [another product name] in National Trust, which is a big partner for us because strategically the National Trust and their mission on biodiversity fits quite nicely with our [product names] and brand values." (Eco-UK)</i> <i>"As a corporate, we are owned by one guy, we are a family-owned business, which does not have the same benefits that people think we should have. We don't have fast decision-making. It's a three-billion-dollar turnover company, and</i>

	<i>anything over 30,000 pounds the owner has to approve in person. That takes a lot of speed up in decision-making. We have this issue where we have a very centralized decision-making [process]."</i> (PP)
Collaboration	<i>We partner up with Sustain or partner up with Soil Association so that our voices are louder alongside theirs."</i> (FBG) <i>"We collaborated with over fifty breweries all over the world to date and this one with [firm name] is part of our ambition to become the most sustainable brewery in the world."</i> (TA)
Attainment of business and environmental certifications/ accreditations	<i>"We add all organic [ingredients] because we are Soil Association certified. That's non-negotiable for our business to start with...we have been having all these different investor conversations they say, wow, you are Soil Association, B Corp, you are Salsa and BRC AA... we do invest a little time...it helped us with on the business model side of things"</i> (EXK) <i>"The B-Corp logo is a way of helping the consumers make ethical decision...there are e-commerce sites now where you can filter by B-Corp certified brands."</i> (TSC)

Given that disrupting the components of BMs is considered a strategic decision, organisational decision-making processes assume an important role in shaping the direction of a company. Four companies categorically elaborated their decision-making processes. For example, PP had a centralised decision-making process, which posits a challenge in terms of organisational agility and responsiveness to changing market dynamics (Teece, 2007; Hahn et al., 2014). In contrast, EXK demonstrated a more collaborative and team-oriented decision-making process to seize CE opportunities.

We identified 18 out of 23 participating firms were actively involved in collaborating with other enterprises. Collaboration is divided in two sub-themes – co-evolving/co-value creation², and partner training and development.

One of the most important contributions of this study is the identification of business and environmental accreditations, which offered organisations numerous benefits. We consider such certifications are pivotal capabilities. It is noteworthy most organisations held some sort of accreditation or certification such as B-Corp, Soil Association, LEAF Marque, Green Key, BRCGS, SALSA, etc. Firms employ such accreditations as a communication tool to engage with their customers, foster trust, and transparency in the marketplace. Accreditations also help in maintaining value of the products, sustainable sourcing and resource efficiency, better employee welfare, and a holistic CE approach in doing business.

² Co-evolving or co-value creation can be described as developing joint products and processes and partner-based synergies.

4.3 Managing Threats/Transforming

We identified six transforming capabilities, classified as (a) organisational restructuring and governance, (b) circular supply chains (c) technological upgradation, (d) knowledge management, (e) developing integration and coordination skills, and (f) adaptation of best practices. A summary of these findings is given in table 5. Empirical evidence from this study indicates that all firms were involved in reconfiguring their business operations and models, thereby advancing towards circular transformations.

Organisational restructuring and governance changes happened in terms of acquiring a new facility, plant, or equipment, change of board members or ownership, and incentive alignment (paying employees well).

Our findings reveal 16 firms demonstrated their approach toward establishing Circular Supply Chains (CSC). The initiatives included upcycling of waste into higher end products, repurposing food surplus and waste for both human and animal consumption, as well as sourcing ingredients locally (short supply chains). Businesses were primarily involved in reducing, reusing, reprocessing, repurposing, and recovering food waste management strategies in creating a CE model as illustrated through interview quotes (see table 6).

Literature indicates CE is an emerging construct not many companies have the conceptual clarity let alone CE integration into organisational goals and BMs (Geissdoerfer *et al.*, 2017; Diaz Lopez, Bastein and Tukker, 2019). Consequently, the acquisition and dissemination of CE knowledge, followed by its integration into operational capabilities, become critically important. In our study, 19 companies elaborated their approach to integrating CE knowledge through internal training and external collaboration.

Additionally, organisations also formed decentralised teams by developing integration and coordination skills (Teece, 2007) to carry out innovative activities in the firms. Moreover, organisations adopted innovative ways of working, which sums them up as CE and sustainability-focused firms. This approach gives them a competitive edge over their rivals.

TABLE 5 Summarized results – Managing threats/transforming

Microfoundations	Description	Cases	References
Organizational restructuring and governance	Acquisition of new facilities or unit	11	16
	Governance structure	4	4
	Incentive alignment	3	4
Redesigning supply chains	Reducing, reusing, reprocessing, repurposing, recycling strategies. Short supply chains.	16	35
Technological upgradation	Managing strategic fit; Incremental changes	8	11
Knowledge management			

	Knowledge transfer; Knowledge acquisition; Knowledge integration	19	44
Developing integration and coordination skills			
	Building decentralized teams for innovation	8	16
Adaptation of best practices			
	Innovative practices	11	18
	Novel work methods	13	24

Table 6 Reconfiguring & transforming interview quotes.

Microfoundations	Interview Quotes
Organisational restructuring and governance	<i>We moved down to Wales two years ago. We split the company into two (segments). Down here we have R&D, manufacturing, and compliance management. In [city name], we have the solutions side and a small R&D.” (SS)</i> <i>“We started the business as a cooperative. We had to change to a limited company to get investment.” (HF)</i> <i>“One of our key foci is over the last five years has really been about putting our people first and to improve the [organisational] culture.” (HHB)</i>
Circular supply chains	<i>“Except for our X recipe. The majority are sourced locally.” (CTC)</i> <i>“We are building up a supply chain now for seaweed that comes back to us. We are looking at what distributors do with the wastewater and how that's controlled to make sure it's not contaminated so that it can get back into the systems.” (BDR)</i>
Technological upgradation	<i>“There are also other technologies, primarily around water use, which we are trying...one of which is called a fluid VAC system...we do have a rain harvesting systems on site.” (ID)</i> <i>“We have upgraded a lot of the equipment, which allows us to make our labour much more effective and efficient.” (EXK)</i>
Knowledge management	<i>“We are constantly trying to make sure our employees are empowered. We are constantly running training courses to make sure that they have the skills that they need to be able to carry out their jobs effectively.” (ORT)</i>
Developing integration and coordination skills	<i>“Our sourcing team plays a vital role in managing the transition to decentralization and facilitating the exchange of knowledge and learning among teams. They ensure that the necessary</i>

	<i>information flows smoothly between different departments, enabling seamless coordination and integration."</i> (Eco-UK)
Adaptation of best practices	<i>"We have also started our own compost on a larger scale...we now have entirely waterless system. They all go back down to the Reed bed as well."</i> (BSB) <i>"We are a circular economy business...we are re-processing and producing an end product [out of coffee waste]."</i> (BB) <i>"We have a system of growing crops using regenerative agriculture...that's very good for building up the organic matter in the soil...we integrate livestock into the farming as well so that there's manure coming in- it's looking after the soil."</i> (EHF)

The above empirical evidence suggests that majority of the participating firms, whether an SME or large organisation has, to a great extent, managed to disrupt their BM around CE principles. These companies are reinventing their value proposition, creation, and capture mechanisms. By timely sensing market demand and being vigilant to changing consumer preferences and ecological problems, they have developed relevant capabilities required for BMI process. Findings reveal dynamic capabilities play crucial role. These findings are consistent with several studies as discussed in the next section.

5. Discussion

5.1 Theoretical Implications

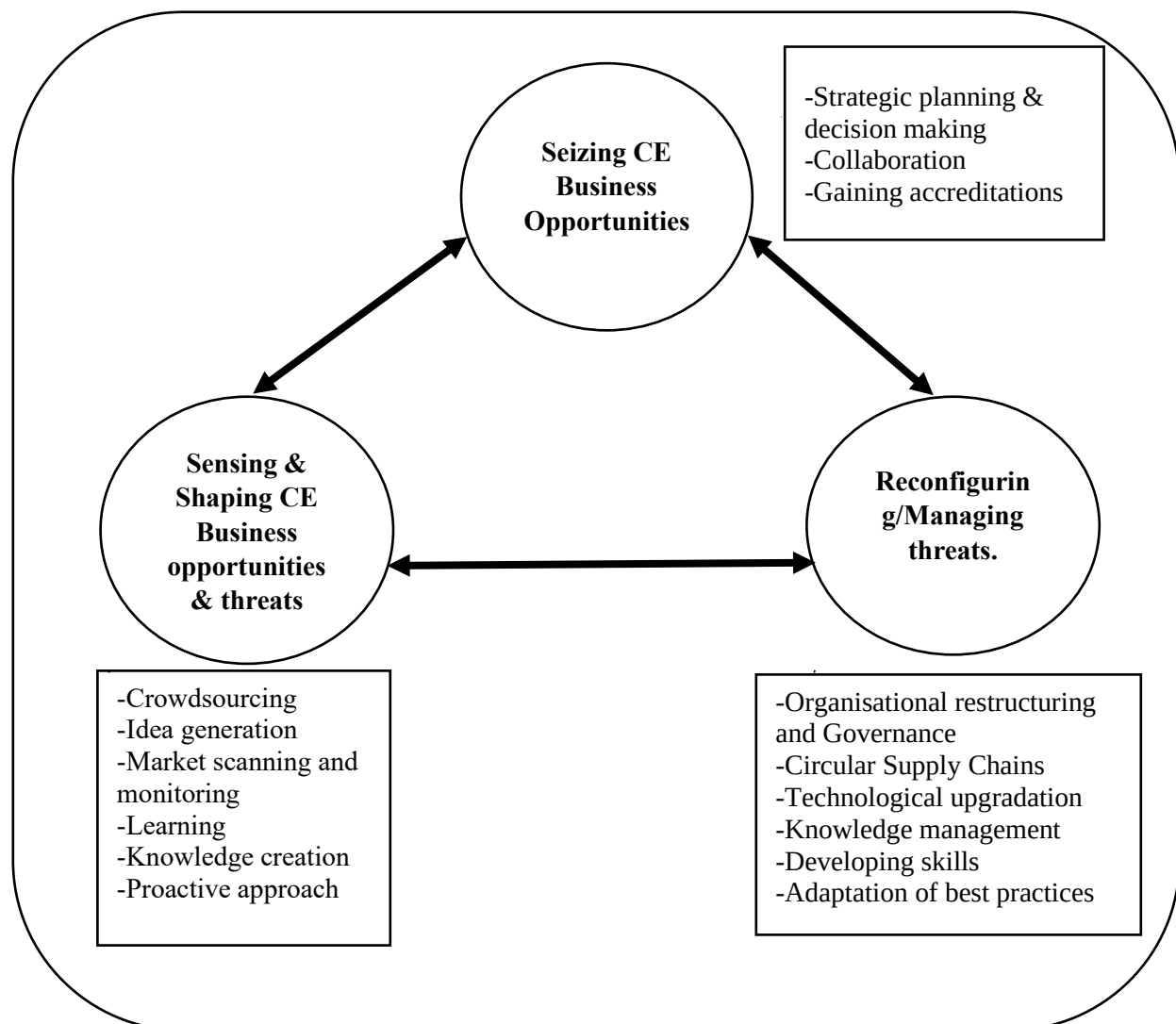
Dynamic Capabilities for CEBM Innovation

This study has attempted to fill the gap on the convergence of circular economy (CE), business model innovation (BMI), and dynamic capabilities (Manninen et al., 2018; Pieroni, McAloone and Pigosso, 2019; Seles et al., 2022) Particularly, we looked at how sensing and seizing capabilities facilitate BMI process, how firm reconfigure their existing structure and business operations to manage threats, and what resources, managerial processes and routines, and activities were utilised and actions taken in this regard. This paper makes three important contributions to the theory of dynamic capability (Teece, Pisano and Shuen, 1997; Teece, 2007), enriching the Microfoundations of sensing, seizing, and transforming. Our research complements the dynamic capability view of the firm through empirical evidence demonstrated by the participating organisations and extends many of the previous studies. We found that these capabilities do not just work in isolation but rather through an iterative process (see figure 4), thereby brings improvement in the conduct of organisational affairs and avoid strategic drift over the time.

Findings unveil firms embedded CE principles into their business strategies and models. Businesses were found to be determined toward CE implementation while incorporating social and environmental goals and aligning them with economic value creation (Stubbs and Cocklin, 2008). The examined case firms were not only focused on product & service innovation (value proposition), or process innovation (e.g., upgrading technologically) but rather they were also disrupting all the components of their BMs (Mezger, 2014), including forming strategic alliances, creating circular supply chains, and generating new revenue streams (Bouncken and Fredrich, 2016; Geissdoerfer *et al.*, 2018) for sustainable firm performance.

CEBM innovation is an emerging field as literature suggests. It is no surprise many businesses collaborate in their value network for economic and environmental value creation. Several studies e.g., (Brehmer, Podoynitsyna and Langerak, 2018; Zucchella and Previtali, 2018; Dora, 2019) emphasise on the role of collaboration between the firms. Teece (2007) also identified collaboration an important capability for sustainable firm performance. However, such collaboration would require trust and confidence between the actors (Ghini, Silvestri and Steiner, 2020). Many organisations in this study capitalised on their previous partnering experience and reoriented their relationships for mutual benefits (Gulati, Lavie and Singh, 2009), whilst a few others formed new collaboration. Our results support findings of previous studies (Wu et al., 2012; Inigo, Albareda and Ritala, 2017; Kabongo and Boiral, 2017; Annunziata et al., 2018; Hopkinson et al., 2018; Khan, Daddi and Iraldo, 2020), validate dynamic capability perspective (Teece, 2007) through empirical evidence, and add three new bundle of Microfoundations while confirming many others. Teece (2018) argues BM design and its execution depends on an organisation's capabilities. The design, improvement, execution, and transformation of BM are the output of high-order dynamic capabilities.

Figure 4: Dynamic Capabilities for Business Model Innovation within the Circular Economy Context



CEBM Innovation a non-linear dynamic process

We argue that CEBM innovation is a non-linear iterative and dynamic process as the framework (see figure 4) shows here. The framework denotes that how an organisation develops and employs superior capabilities which not only facilitate in disrupting the components of BM but also form the foundation of competitive advantage of a firm. Considering BMI a learning driven process (Foss and Saebi, 2017), which is unnecessarily impacted by exogenous factors e.g., regulatory and institutional changes, and thus largely facilitated and driven by firm's internal capabilities with an entrepreneurial intent (Loon and Quan, 2021). Teece and Pisano, (1994) and Teece, Pisano and Shuen, (1997) proposed three managerial/organisational processes—coordination, learning, and reconfiguring—as the core elements of dynamic capabilities. These processes, according to Teece (2007), make subset of processes that support sensing and shaping, seizing, and managing threats. We could together think of them as asset “orchestration” processes (Teece, 2007 p.1341). Finding value-enhancing combinations within the company and between and amongst companies is an important strategic function of management (Teece, 2007). Examples of such value creation may include strategic decision making, product development, knowledge & capabilities creation and transfer, and alliance formation (Eisenhardt and Martin, 2000) as exhibited in the framework here. In the context of transforming to a CE model, building circular supply chains (CSC), for example, is a crucial value-creating activity management performs dynamically considering other actors in the value network. Nonetheless, as the most of valuable resources in firms are knowledge and skills related that are non-imitable in the market anyway, integration of such resources would create value for firms.

Although sensing, seizing and transforming activities occur cross-functionally in an organisation, but they are steered by senior management of a company (Teece, 2007) and same is true for BMI as a strategic change involving executives. The proposed framework here within CE context, not only emphasises the shifting nature of the environment; but also focuses on the important role of strategic management to adapt, integrate, and re-configure internal and external organisational skills and resources, and functional competences towards dynamic environment (Teece and Pisano, 1994; Teece, Pisano and Shuen, 1997). Consequently, firms putting efforts to adapt their BMs in embracing CE should undergo structural adjustments to integrate CE strategies and think and act iteratively.

A New Bundle of Microfoundations

We extend the dynamic capability view of the firm by introducing three novel Microfoundations, particularly within the CE context. They are 1) crowdsourcing, 2) attainment of business and environmental accreditations, and 3) circular supply chains. Importantly, these findings corroborate our initial premise, emphasising the integration of CEBM within the domain of strategic management. This integration not only provides a robust theoretical foundation but also assist organisations pragmatically for the execution of CE strategies and adapting their business models according to CE principles.

Crowdsourcing a crucial capability for sensing and shaping CE business opportunities and threats was not found in previous studies, specifically related to the food industry. This marks an immense contribution for theoretical understanding. Crowdsourcing solicits ideas from

customers through online platforms – online user communities– in which customers critique company’s existing products and provide innovative ideas for NPD (Jeppesen and Frederiksen, 2006) – how value should be proposed, in other words. According to Felin and Zenger (2014) and Felin and Powell (2016) crowdsourcing and innovation contests are important sensing capabilities that enable firms to engage with external stakeholders through open innovation, primarily with customers and suppliers who could be involved in learning and innovation processes e.g., product development and understanding and accessing markets. We identify crowdsourcing as an important microfoundation of sensing capability pursued by case firms, particularly by SMEs and extends its orientation in food companies. However, we were unable to find evidence regarding innovation contest. This could arguably be because innovation contest is usually practiced in high-tech industries compared to food and beverage businesses.

Second important contribution to the Microfoundations of dynamic capability is attaining business and environmental accreditations/certifications. Accreditations are a seizing capability. Previous studies have been silent on this important capability. Beske, Land and Seuring, (2014) consider Environmental Management System (EMS) and ISO standards and certifications key to risk management. However, we argue business and environmental accreditations such as B-Corp, Soil Association, LEAF Marque, Ecovadis etc. go much beyond than mere risk management measures. We contend that such accreditations offer much powerful communication tool for organisations that not only effectively engage with customers but also supplements sales figures, forge strategic partnerships, attract investment, develop resilient supply chains, and create substantial environmental value. Moreover, these certifications serve as blueprint for employee engagement and welfare, fostering a sense of purpose and alignment with organisation’s sustainable goals. This key contribution not only expands the understanding of seizing innovative business opportunities but also strengthens the competitive advantage that firms can achieve by leveraging such business and environmental accreditations. There are also theoretical implications for organisational theory where such certifications challenge the traditional/hierarchical structures, promoting a more collaborative and inclusive approach to problem-solving and decision-making. This will bring organisational agility and flexibility.

Although several studies e.g., (Geissdoerfer *et al.*, 2018; Farooque, Zhang and Liu, 2019; Ersoy *et al.*, 2022) investigated circular supply chains, however, they have not considered it a dynamic capability. Beske, Land and Seuring (2014) being the only exception in broader sustainability studies. We argue that incorporating circular supply chains into Teece’s framework would bring theoretical advancement particularly in managing threats/transforming dimension. This significant contribution enriches the dynamic capability view by broadening its scope and would provide a unified transformation toward CEBM.

5.2 Practical Implications

In addition to the contribution to theory, there are important implications for business managers and policy, specifically within the food industry.

To understand the changing market dynamics and consumer preferences, organisations conducted surveys, systematically tracked trends, managed feedback loop, and then experimented with their products and processes (Bocken, Schuit and Kraaijenhagen, 2018). It can be argued organisations relied on multiple sources of information gathering for sensing CE business opportunities and then disrupting their BMs accordingly. This information primarily fed back to value proposition components of BM – products and target customers (Richardson,

2008). This implies that the more businesses engaged in market monitoring and scanning, the better firms adapt their BMs according to the changing economic and environmental landscape.

Companies involved in crowdsourcing achieved faster access to novel market opportunities (Wiertz and De Ruyter, 2007). The participating companies (BSB, EXK, TSC, T&S, and HF) reported different forms of crowdsourcing such as raising funds, financial support, incorporating innovative feedback from customers and suppliers into their business process optimisation, and gaining knowledge and insights. Crowdsourcing also helped these businesses in creating awareness and exploration of novel platforms such as Crowdcube etc., allowing for a broader participation in responsible and ethical decision-making. Entrepreneurs often employ intermediaries such as Kickstarter, Crowdcube, Indiegogo, Fundable etc. which connect entrepreneurs with investors (Belleflamme, Lambert and Schwienbacher, 2014). The empirical evidence in this study confirms such crowdsourcing processes and routines in sensing and seizing CE-oriented opportunities.

BMI is considered a learning driven process (Mcgrath, 2010) in which experimentation plays a critical role (Schneider and Spieth, 2013), the study found both SMEs and large organisations were engaged in experimentation. Experimentation not only helped firms with innovative value proposition but also facilitated testing the viability of novel BMs such as CEBM (Hofmann and zu Knyphausen-Aufseß, 2022). This implies that firms engaged in circular value proposition and creation are required to test and perform experimentation as part of their CE strategies. Kabongo and Boiral (2017) and Hofmann and zu Knyphausen-Aufseß (2022) suggest business experimentation is a dynamic capability that facilitates BMI and corporate sustainability. The current study endorses such BM experimentations. The finding is also consistent with (Bocken, Schuit and Kraaijenhagen, 2018).

Gusmerotti et al. (2019) identify that environmentally conscious leaders drive BMI. We identified mixed results regarding decision-making processes and leadership. For instance, in the case of PP, anything exceeding £30K, required the approval from the company leadership. This indicates a slow decision-making process and risk-averse behaviour could impede effective implementation of CE initiatives (Teece, 2007; Hahn et al., 2014). Conversely, the top management of EXK and SB practice a more collaborative and team-oriented decision-making process to seize CE opportunities. They arguably showed a propensity to risk-taking in CEBM innovation. The ecopreneurial leadership (Gibbs, 2009) in these firms imply that CE measures were not a second thought and the businesses have created a culture of innovation that was driving BMI aligned with CE. Bocken et al., (2014) considers such proactive approach as 'adopting a stewardship role' (p.51). Teece (2007) suggests that a devolved decision-making and a strong leadership foster organisational agility. Previous studies, such as Sousa-Zomer et al., (2018), have identified leadership behaviour a barrier to CEBM innovation.

Findings also revealed collaboration is a critical capability for value creation and seizing CE opportunities. Focal firms collaborated with like-minded businesses, NGOs, universities, and charitable organisations to jointly develop eco-friendly products, contribute to environmental preservation, and participate in biodiversity projects. Collaboration facilitated redesigning of supply chains in closing loop through practices such as reducing, reusing, reprocessing, repurposing, and recycling food waste. Moreover, collaboration yielded benefits in terms of partner-based synergies. This finding is consistent with several previous studies e.g., (Beske, 2012; Hofmann, Theyel and Wood, 2012; Beske, Land and Seuring, 2014; Dora, 2019).

Sixteen firms were redesigning their supply chains to close the loop and source sustainable food ingredients, illustrating their commitment with zero-waste to landfill strategy. Practices such as upcycling and renewable energy production were identified (Hussain, Mishra and Vanacore, 2020; Kang *et al.*, 2020). Beske, Land and Seuring (2014) identified knowledge assessment as an important dynamic capability for sustainable business innovation. We support Beske's argument. However, we also argue knowledge transfer depends on organisational willingness and the nature of knowledge's impact on competitive advantage. For example, K-UK shared knowledge with its European partners but withheld technological insights from Asian counterparts, likely due to patenting rules and regulations. Likewise, BB showed willingness for licensing activities in Europe but not in the UK due to competitive pressure.

6. Conclusion

This study was driven by two primary objectives. The first objective was to establish comprehensive link between BMI and strategic business orientation. This endeavour was accomplished through an exhaustive literature search within the domain of strategic management and business innovation. Secondly, to investigate resource-based perspective particularly the dynamic capabilities – sensing, seizing, and reconfiguring/transforming – as instrumental catalyst for facilitating BMI process and driving the philosophy of CE within organisations. In doing so, this study not only enhanced the understanding of CEBM discourse but also significantly contributed to the advancement of the underpinnings of the theory of dynamic capability framework (figure 4). The empirical evidence presented in this research, drawn from in-depth case firms, provided compelling insights. It evidently showcased how internal organisational capabilities serve as foundation upon which CEBM innovations are built. These innovative capabilities act as potent driver of natural environment regeneration and broadly help in achieving sustainable development, which indisputably aligns with overarching goals of the CE.

6.1 Limitations and future research

Besides its strengths, this paper also has limitations. The findings are derived from self-reported data provided by the participating organisations, which may be subject to biases. The future research can include more data sources such as surveys and participant observation, which will help in data triangulation. It was unfortunately impossible due to the COVID-19 Pandemic. Second, the study was based on limited number of themes that focused on dynamic capabilities. There could be other organisational, social, and regulatory dimensions or factors affecting business model innovation for the circular economy. Future research may focus on how other factors impact transformation toward CE-focused business model. Third, the research emphasised the food and drink as an industry for the application, therefore, the generalisability of the findings may be approached with caution. The findings may or may not be applicable to other industry context or settings. Fourth, the research is silent on within case dynamic capability and BMI differences. For instance, how dynamic capabilities of each organisation differ from one another. Further research can explore this dimension in future. By acknowledging these limitations, future investigations can address these gaps and provide a comprehensive understanding of the CEBM innovation in firms.

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Appendix A (Description of the Participating Firms)

No.	Code	Firm Size	Firm Description	Participant Role
1	ACC	Micro	ACC is a micro coffee producing and retailing business, which started in 2020. They are a speciality coffee roaster.	Director
2	BDR	Small	BDR is a small-sized spiced rum producing business, which directly sells to customers and also through wholesalers. BDR uses seaweed as a natural flavouring in their products. They are also involved in creating biodiversity in sea.	Managing Director
3	BB	Small	BB, a B-Corp certified business, is creating value out of a waste product – spent coffee grounds. They also reuse coffee grounds into flavour product - in ready to drink coffee. They send their dried coffee grounds further down in the supply chains to make bioplastic and brake pads.	Chief Financial Officer & co-founder
4	BSB	Small	BSB is a craft beer producing company, which are also SALSA approved and Green Key accredited. They received ‘Sustainable Business of the Year’ award in March 2023.	Director
5	CTC	Small	One of only a few organic raw milk cheese making businesses in the UK. The most of CTC ingredients are locally sourced. Their artisan cheese products and organic accreditation – Soil Association - make them unique.	Managing Director
6	EHF	Small	EHF is the first B-Corp farm in the UK. They have got a mix farm. EHF grows food and supports nature and biodiversity.	Managing Director
7	Eco-UK	Large	Eco-UK is a large organic food company, which is also B-Corp certified. They produce different sustainable food brands ranging	Marketing & Category Director

			from plant-based to dairy free products.	
8	EXK	Small	EXK are a B-Corp, Soil Association, and BRCGS certified business. They are one of the most liked Kombucha producing company in Britain due to its high-quality products.	CE & Sustainability Head
9	FBG	Large	FBG is a large social enterprise, which works with people, communities, business enterprises and governments for the ecological renewal of food system.	Senior Project Manager
10	HHB	Large	HHB is a century old family-owned business in food manufacturing and wholesaling. They are a B-Corp certified company. They produce craft baking products. Most of their food ingredients are locally sourced and organic.	Director Marketing
11	HF	Micro	HF is a small business start-up, which produces one of world's most nutritionally dense organic and plant-based protein bars. HF is SALSA and BRCGS approved, and Organic Food Federation (OFF) certified.	Managing Director
12	ID	Large	ID is a part of a giant MNC and operates as a spin-off business that is B-Corp certified.	Sustainability Head
13	K-UK	Large	K-UK is another large B-Corp food company. They produce several natural food ingredients for colouring, taste, and food protection.	Vice President UK & EU operations
14	MB	Small	MB is one of six SALSA approved beer producing businesses in Wales. Their business model takes into consideration 4R strategy i.e., reduce, reuse, recycle, and recover.	Director
15	ORT	Large	ORT was about to begin its operations at the time of the	IT Manager

			interview. They were concentrating on building a factory that will take the waste in from various companies including food packing waste and then split it out into different waste streams.	
16	PM	Small	PM produces a wide range of different beers for different markets and also offer home cooked food.	Managing Director
17	PP	Large	PP is a UK based American company that reprocesses plastic waste using recycled plastic contents and convert them into food-grade resin with PET.	Sustainability Director
18	SB	Small	SB is a B-Corp certified brewery that operates with CE and sustainability at the forefront of the business.	CEO & Co-founder
19	SS	Small	SS is a wastewater specialist R&D company. They are unique in terms of their products and services – the only one in the small business category in the UK	Managing Director
20	TA	Small	TA is a small yet significant B-Corp accredited purpose driven brewing business. They are unique in terms of their brewing processes – brew with waste bread.	Chief Operational Officer
21	TGTG	Large	TGTG is a B-Corp certified large social enterprise and an online platform that connects different kinds of food businesses with other businesses and consumers.	Regional Lead Southwest and Wales
22	TS	Medium	TS is the world's first organic, vegan, and B-Corp certified non-alcoholic sparkling wine producer.	Communications Director and Investor
23	TSC	Small	TSC are a B-Corp certified coffee manufacturer and an ethical British family-owned business.	CEO & Co-founder