

Article

Towards a Conceptual Framework of Sustainable Business Model Innovation in the Agri-Food Sector: A Systematic Literature Review

Henrik Barth * , Per-Ola Ulvenblad and Pia Ulvenblad 

Center for Innovation, Entrepreneurship and Learning research (CIEL), Halmstad University, Box 823, 301 18 Halmstad, Sweden; per-ola.ulvenblad@hh.se (P.-O.U.); pia.ulvenblad@hh.se (P.U.)

* Correspondence: henrik.barth@hh.se; Tel.: +46-35167465

Received: 27 July 2017; Accepted: 10 September 2017; Published: 12 September 2017

Abstract: This paper aims to increase our understanding of sustainable business model innovation in the agri-food sector in terms of its theoretical and practical approaches for sustainability and their degree of complexity and maturity. The paper is based on a systematic literature review of 570 journal articles on business models and business model innovation published between 1990 and 2014. Of these articles, only 21 have business model innovation as their main focus. The review shows that research interest in the agri-food sector has increased in these years. The paper proposes a conceptual framework for sustainable business model innovation in the agri-food sector that can be used to meet the challenges encountered in taking a sustainability perspective.

Keywords: business model innovation; agri-food; farmers; systematic literature review; entrepreneurship; sustainability

1. Introduction

This paper aims to increase our understanding of sustainable business model innovation (BMI) in the agri-food sector in terms of its theoretical and practical approaches for sustainability and their degree of complexity and maturity. As a systematic literature review, the paper also aims to increase our knowledge of how previous research has treated the relationship between business models (BM) and sustainability in the agri-food sector and by this take a step towards a conceptual framework of sustainable business model innovation.

The area of focus is important globally since a crucial part of the societal challenges of the future are linked with agricultural sustainability and food production. According to various sources, food production will have to increase 70% by 2050 [1–3]. The European Union’s Research and Innovation program “Horizon 2020” [4] and the United Nations’ sustainable development goals [5,6] prioritize research and innovation on food security and sustainable agriculture and [1] (p. 2) conclude from recent stakeholder discussions: “The world’s agriculture and food systems must become more productive, more resource-efficient, more resilient, and less wasteful”. It is also claimed that sustainable agricultural development can enhance the nutritional quality of food and thereby produce positive health effects [7,8].

These are important issues also at the firm level because of increased worldwide competition and advanced technological developments in the agri-food sector. With the resulting general trend in the agri-food sector toward fewer and larger farms [9,10], we may ask whether the global goals of sustainable agricultural development can be met. When increased productivity and greater profitability in the sector become necessities, agri-food entrepreneurs must take a more strategic and innovative perspective as they engage in BMI that focuses on sustainability. Food SMEs that have successfully managed these challenges by differentiating their business activities have usually developed new

BMs based in a diversified approach [11], in a network approach [12], or in a value-net approach [13]. Interaction with society through more community involvement and a focus on environmental issues is one notable feature of these BMs. Several researchers have revealed the limitations of BMs focused exclusively on profit [14–16].

Previous research shows that, since the mid-1990s, interest in BMI has increased from both a practical perspective and a theoretical perspective [17–22]. A variety of BM definitions and settings appears in this research—from the single company to the entire value network [17,23,24]. A consensus exists that BMI is essential for successful organizational performance [24]. For example, the BM canvas developed [17] seems useful for practitioners who are trying to develop and innovate their BMs [25]. In the research, BMI is generally interpreted as a process or as an outcome. For example, BMI as a process may include experimentation and testing that takes a discovery-based approach [26] while BMI as an outcome may relate to some form of BMI typology [27].

In the 1990s, the BMI literature also began increasingly to emphasize business innovation and management. The roots of this interest can be traced back in time. For example, the focus on value chain model [28], and development blocks [29]. Various classic studies [30–34], concluded that organizational performance is related to factors such as structure, strategy, size, technology, and environment.

Various BMs have been proposed that consist of different elements and different building blocks. Practitioners and researchers often use a BM [17] model which includes nine building blocks: (i) customer segments; (ii) the value proposition; (iii) value channels (e.g., activities needed to develop, produce, and deliver the firm's products/services); (iv) customer relationships; (v) revenue streams; (vi) resources; (vii) activities; (viii) partnership; and (ix) cost structure [21]. Based on this original model, a more concentrated framework has been suggested [35] with only three elements: (i) the value proposition; (ii) the value creation and delivery system; and (iii) the value capture system. This developed framework has also been used when discussing sustainable business model archetypes [36].

Empirical research [37] on BMs has predominantly focused in the media, information technology, and biotechnology sectors (between 1996 and 2010). Research about BMs, BMI, and sustainable BMI in the agri-food sector has generally received little attention [38]. The research conducted often relates to developmental areas in the world [39]. However, we can also find early examples of the 19th century as in the *Swift Company* in America, which managed to decrease the shipping time for cattle shipped live by using local slaughters, railways, and the new refrigerated solutions [22]. Further, research about entrepreneurship in the rural environment has focused on business models in the food-production value chain such as restaurants [40].

Researchers have also called for studies of BMs that address sustainable development and that take a value-added approach [41–44]. In a review of 681 articles on BMs [45], the development of BM research was focused, including various definitions, perspectives, and components. Nevertheless, we still lack in-depth research on sustainability as far as the social, environmental, and economic (financial) factors. Although this comprehensive literature review [45] focuses on the importance of 'change and evolution' in BM research, they do not relate such research to the social and environmental aspects of sustainability.

If business model innovation intends to include sustainability aspects, it is necessary to look beyond the entity of the firm. Sustainability has to do with both social and environmental factors as well as economic factors—financial performance [36,44,46] and therefore several stakeholders such as customers, suppliers, shareholders etc. are involved in the development. Furthermore, the focus is on changing the way you do business instead of focusing on processes and products—what you do [18].

A difference exists between the components included in non-specific BMs and in BMs that focus on sustainability. Typically, as explained by research [45], BMs include (i) strategic components (strategy model, resources model, network model), (ii) customer and market components (customer model, market offer model, revenue model), and (iii) value creation components (manufacturing model, procurement model, financial model). These components originate from three fundamental theoretical

perspectives: (i) a technology orientation, (ii) an organizational orientation, and (iii) a strategy orientation. By contrast, BMs that focus on sustainability are concerned with social, technical, and environmental innovation [36,42]. Such BMs also emphasize the importance of integrating sustainability related factors into the components and core processes rather than simply superimposing sustainability factors on the original model [43].

Researchers have worked with the integration of sustainability factors into BMI in different ways. For example, the work of [36] applied an integrated approach in their development of eight sustainable business model archetypes. These archetypes derive from questions on ‘value proposition’, ‘value creation and delivery’, and ‘value capture’. They categorize these archetypes as technological, social, and organizational. Technological archetypes (i) maximize material and energy efficiency, (ii) create value from waste, and (iii) use renewable substitutes and natural processes. Social archetypes (iv) deliver functionality rather than ownership, (v) adopt a stewardship role, and (vi) encourage sufficiency. Organizational archetypes (vii) repurpose society/environment and (viii) develop scale-up solutions. Together, these archetypes represent a comprehensive view of sustainable BMs. Further, based on an original BM model, researchers [47] have developed a model [21] by adding questions highlighting strong sustainable business model (SSBM); conception, boundaries and validation of a SSBM, necessary financial viability of a BM, modelling social benefits and environmental regeneration. Although this research is a great step in modelling sustainability in general related to BM we still lack models that especially focus the agri-industry.

To summarize, it is important to conduct research in general in the agri-industry due to the arguments stated above; a need for increased food production in the world combined with a need for raised degrees of sustainability in the food value chain. However, almost all research regarding the agri-industry has focused on the production aspects and the first links of the food value chain. Since studies regarding business model innovation have focused on other industries than the agri-industry, it is even more important to focus specific research on sustainable business model innovation in the agri-industry and the latter links of the food value chain [11].

Further, it is also important to conduct research in the agri-industry since it has characteristics that differ from many other industries [11]. Many companies in the agri-industry are owner-managed family businesses that are rooted in their communities. The owners regard themselves as stewards or custodians of the company, the property, and the environment, with a responsibility for living and non-living things. They expect that their companies are going to be there for the indefinite future and the owners are not solely concerned with growth and revenues. Some other differences compared with other industries are: (i) the nature of agricultural production, which is diffuse and seasonal. It means that there are many small primary producers, depending on a diversity of climates, who sell and deliver products to processors and retailers; (ii) the market concentration at the end of the supply chain; and (iii) the close connection between production processes and the quality and safety of the product [48]. Beside this, it is also claimed that sustainable agricultural development can enhance the nutritional quality of food and thereby produce positive health effects [7,8].

To fill the gap in the research on sustainable BMI in the agri-food sector, the aim of this paper is to increase our understanding of sustainable business model innovation (BMI) in the agri-food sector in terms of its theoretical and practical approaches for sustainability. The paper also aims to increase our knowledge of how previous research has treated the relationship between business models (BM) and sustainability in the agri-food sector. Altogether, this serves as a first step towards a conceptual framework in which BMI is the main concept.

The rest of the paper is structured as follows. First, we present the methodological approach with argument for the choices in the process of conducting a structured literature review. After this, we present the results of the literature review together with a discussion about the first step towards a conceptual framework of sustainable business model innovation. Finally, we discuss conclusions, implications, and avenues for future research.

2. Materials and Methods

This systematic literature review is based on a previous comprehensive review of BMI in the agri-food sector [49], in which the three authors of this paper read and analyzed more than 500 articles included in the review. We also followed recommended steps for doing a literature review [50]: (i) identification of sources of information, (ii) identification of articles, and (iii) identification of reviews of items.

We began with the selection of 10 databases: Web of Science, Scopus, ABI/Inform, Emerald, Science Direct, Academic Search, Springer-Link, Jstor, Sage, and Agricola. Agricola specializes in research on the agri-food sector. For this selection, we had three criteria: (i) researchers in the social sciences use these databases most frequently; (ii) the databases can be accessed at the library at the author's university; (iii) a mix of database types (e.g., citation databases, publisher databases, and subject area databases) was required. Following the methodology of a literature review on organizational innovation [51], we limited our search to peer-reviewed journals with the highest impact factor in their area.

This mix of database types allowed us to assemble a comprehensive list of relevant articles. Publisher databases list their scientific, peer-reviewed publications by a subject word (if available, which is often the author name), but searches are not controlled. Furthermore, searches are often conducted in full text, which does not always produce sufficient results ('hits'). In contrast, subject area(s) databases such as ABI/Inform and Academic Search include subject(s)-focused collections of peer-reviewed articles and other materials from various publishers. Searches among such databases are easier because of their sets of subject headings (a thesaurus) that describe the database content.

Second, we selected the articles for our systematic literature review. We had the following criteria: (i) articles must be published in peer-reviewed journal, in English; (ii) articles must mention BM or BMI; and (iii) articles must use agri-food, agriculture, or agribusiness or the food processing sector/industry in the title, keyword list, abstract, or full text. Articles had to meet all three criteria.

Following these criteria, we identified 570 articles published between 1990 and 2014. We categorized all the articles in the following five categories: (i) key words; (ii) unit of analysis; (iii) country of data collection (i.e., settings); (iv) methodology (conceptual vs. empirical); and (v) use of theory.

Third, we screened the articles by focusing on their content relevance from reading their abstracts and, in some cases, from reading the articles. We established that 316 of the 570 articles had no or very little basis in theory and/or little discussion of BMs, BMI, or the agri-food sector. We classified the remaining 254 articles based on their content. In the examination of the articles, we also looked for connections among the articles. Classification is a necessary step in the analytical stage of a literature search as it provides a descriptive and systematic foundation for future evaluation of themes [50]. After this evaluation, we identified eight relevant themes: (i) business model and business model innovation, (ii) supply chain/value chain, (iii) sustainability, (iv) innovation, (v) strategy, (vi) marketing, (vii) networks, and (viii) miscellaneous.

Fourth, for this paper we chose the theme of 'business model and business model innovation' in order to acquire a deeper understanding of the maturity and complexity of the BMs the articles described. The last evaluation process focused on the contribution of each paper, and was matched in relation to business models and building blocks, degree of innovation, and contribution to sustainability aspects. In total, 21 articles added value to these dimensions and are presented in more detail in the Appendix A.

During the last two decades, systematic reviews have become widely accepted formats to present focused reviews of existing literature [52]. However, the systematic literature review process places strong emphasis on quality assessment, which commonly refers to high level of validity and reliability.

In this literature review, reliability was aimed for by addressing procedural steps of doing a literature review presented by Hart [50]. The literature review was conducted by three researchers and each of the steps were discussed before and compared after in order to increase inter-rater reliability during the literature analysis [53]. Validity was aimed for by means of sampling articles based on

established guidelines [50], and constructs from previous published literature reviews were compared, within as well as from outside the research field [54–56]. Furthermore, the on-going research work on this review has also been presented at conferences and seminar, enabling other researchers to comment on work-in-progress.

3. Results and Discussion

The literature review has been focusing on the business model, with the purpose of developing our knowledge of the maturity and complexity of business models in the agri-food sector. 21 articles have been analyzed and evaluated. The articles are presented in Appendix A. The analysis based on these articles, reveals a broad set of studies, including theoretical, empirical, and practical contributions. Based on the systematic literature review, we have identified some patterns and links between the articles, but also some areas where additional research is needed. Three specific aspects have been focused on here.

First, the concept of business model have been studied for several decades as discussed in the introduction, but the concept seems to be fairly new in relation to the agri-food sector. Nine of the 21 articles took a practice-oriented approach to BM. For example, the emergence of eBusiness models is defined the concept as “doing business that would not have been possible in the past and is based on the use of eBusiness technology” [57] (p. 705). The concept can also be used in a setting with other elements, like [58] coming from a market-based approached with a social mission, viewing the implementation in relation to aspects of the business model. Another example addresses ethical consumption and new business models [59]. These articles focus primarily other topics, where the business model concept is used for practical reasons.

The contributions that address the theoretical concept of business models span over several areas. One of the more developed articles uses a business model framework when studying the relationship between business model innovation and industrial ecology [41]. The framework presented is used with a sustainability perspective, building on previous contributions in the field. Overall, the articles analyzed do in general have rich empirical data, but surprisingly few address the theoretical aspect with a framework in the field, even though the concept is central in their arguments.

Second, the view of business model can take many different forms. Most of the articles view the business model as an output, but some articles include a process related approach, here discussed as either static or dynamic perspective on business models. Classifying firms according to their business model from a static perspective provides alternative views of an industry or group of firms. For example, one article addresses biotechnology firms and describes the organization and innovation process, and identifies business models adopted by these firms [60]. In this study, five different business models are identified. On the other hand, we can find articles that address a more dynamic perspective, arguing that business model development is an initial experiment followed by changes based on trial-and-error learning. One article argues that the relationship between business models and time is little discussed in the literature, and that our knowledge is limited regarding the underlying mechanisms to build a solid theoretical ground [61]. They present two phases of the business model; (i) exploration phase, focusing on the initial business model design and testing; and (ii) exploitation phase, focusing on business model development. The static and dynamic perspectives are two complementing perspectives to understand the maturity and complexity of the business model in agri-food sector. While the static perspective address the output and final business model at a given time, the dynamic perspectives give us an understanding of the complexity of coming up with a sustainable business model. The dynamic perspective seems to contribute to a deeper understanding in the start-up phase or when the firm focus a new market. The initial phase indicates in some cases that the surge of the ‘right’ business model is explored and different solutions are tested, which have not been stated from the beginning. In our review, we can identify articles that have either a static or dynamic perspective, but few articles seem to combine these perspectives, an area that could generate deeper knowledge of the complexity of business model innovation and its outcome.

Third, surprisingly few of the selected articles treat sustainability theoretically, see Table 1. Only four articles [41,62–64] of the 21 articles apply a theoretical perspective on sustainability. The four articles are all based on case studies. One article presents business models for sustainability archetypes [41] when studying the case of British Sugar; maximize material and energy efficiency, create value from waste, substitute with renewables and natural processes, deliver functionality rather than ownership, adopt a stewardship role, encourage sufficiency, repurpose for society/environment, and develop scale-up solutions. In the second article [62] conclusions are drawn that bioplastic companies manufacturing—e.g., food containers—can develop successful business models when they mobilize their “dynamic capabilities” around sustainability. Therefore, a business model for sustainability needs to communicate to societies the ways in which the products can improve in the future, regarding e.g., greater renewable content or better biodegradability, recycling systems or agricultural practices, or a combination of these. The third article [63] includes the case of Eataly and their business model innovation in a complex market for food; many customers want cheap food produced in an efficient way and other customers have an increased focus on food safety and quality and increased awareness of food-related ethics (e.g., ecological sustainability, social justice, and animal welfare.). These three articles address both business model and sustainability theoretically.

Table 1. Theoretical and practical contributions on business models and sustainability.

	Theoretical Sustainability	Practical Sustainability	No Sustainability
Theoretical business model	[41,62,63]	[67]	[60,66,70,71,72,73,74]
Practical business model	[64]	[57,58,59,65,68,69]	[75,76]

Further, the last of the articles that apply a theoretical perspective on sustainability, deals with business models practically but not theoretically [64]. They discuss sustainable food systems from environmental, social, and economic perspectives when studying urban farming. They conclude that “urban farming holds promise as an economically sustainable solution to a number of the problems of the conventional food system” [64] (p. 143). This means that only 3 out of 21 papers apply a theoretical perspective on business model as well as sustainability.

A third of the selected articles address issues of or related to sustainability even though it is done without using the concept sustainability. In these articles, the sustainability perspective is used in a limited and narrow way, without any theoretical depth. For example, one article address the UK pig meat supply chain and discusses food security and continuous employment, but does not elaborate on the concept of sustainability [65].

Many of the articles do not mention sustainability at all, even though the business model concept is treated in a theoretical way in almost all of these articles. One example is an article [66] that address the plurality of co-existing business models within New Zealand Wine industry firms, with a focus in the degree of internalization/externalization of the business models.

The fact that just 4 out of 21 papers apply a theoretical perspective to business model clearly indicates that the business model concept is treated in a rather operational way and that there is a need for further theoretical development and application of the business model concept. This is especially valid when it comes to the sustainability aspect of business models. All in all, there are 12 articles which apply a theoretical perspective on business model, but 8 of them do not apply a sustainability perspective at all.

Although that the previous comprehensive review [49] covered articles published between 1990 and 2014, the 21 articles described in this paper were published between 2005 and 2014. Furthermore, the articles with theoretical perspectives on both BMs and sustainability were published between 2011 and 2014.

We call attention to these facts to illustrate that the theoretical research on BMs and BMI, especially with a theoretical sustainability perspective, is a young and developing, even immature,

field. Much remains to be investigated and developed. Our quest in this paper is to suggest a path towards the development of a conceptual framework for sustainable business model innovation.

Based on previous studies and on the literature review in this paper, we suggest that a conceptual framework for sustainable business model innovation ought to include explicitly the sustainability aspects of the building blocks of sustainable BMI, see Table 2. It highlights the need to include sustainability aspects in every building block in business model innovation. When it comes to value proposition and concerns about the product/service, customer segments, and relationships that enhance sustainability it is also relevant to take into account for example, traceability for products and standards for safety and quality. ‘Value creation and delivery’ will benefit from including not only if the key activities, resources, channels, partners, and technologies focus on sustainability aspects, but also awareness of food-related ethics, ethical consumption. For example, ecological sustainability, social justice, and animal welfare. The building block of ‘value capture’ should not solely focus on if cost structures and revenue streams include sustainability considerations but also include for example, sustainable food systems based on environmental, social, and economic aspects.

Table 2. A conceptual framework for sustainable business model innovation. Based on previous research and structured literature review.

Building Blocks	Description	Degree of Innovation	Sustainability
Value proposition	Product/Service, customer segments, and relationships	Offers ‘more of the same’ or something new to the firm/world? Existing markets or new markets?	Do the product/service, customer segments, and relationships enhance sustainability? For example, traceability for products and standards for safety and quality?
Value creation and delivery	Key activities, resources, channels, partners, and technologies	Improvements of existing channels or new relationships? Familiar (fixed) networks or new (dynamic) networks (e.g., alliances, joint ventures)? Improvements of existing technologies or new, emerging technologies?	Do key activities, resources, channels, partners, and technologies focus on sustainability aspects? Awareness of food-related ethics? Ethical consumption? For example, ecological sustainability, social justice, and animal welfare.
Value capture	Cost structure and revenue streams	Incremental cost cutting in existing processes or new processes that generate revenues?	Do cost structures and revenue streams include sustainability considerations? For example, sustainable food systems based on environmental, social, and economic aspects.
Value intention	Mind-set of owner-manager	Attitudes to change and innovation	Is sustainability a means, a goal, or something else? Is sustainability enhancing or limiting the BM?

Further, it could be argued that ‘value intention’ is an important building block in the development of sustainable business model innovation in the agri-food industry, see Table 2. Companies in the agri-industry have unique characteristics as described above; owner-managed family business and rooted in their communities. The owners expect that their companies are going to be there for the indefinite future and the owners are not solely concerned with growth and revenues. The owners regard themselves as stewards or custodians of the company, the property, and the environment, with a responsibility for living and non-living things. To include value intention of the owner-manager in the conceptual framework, could present important insights of potential trade-offs and barriers when addressing growth ambitions based on social, environmental, and economic aspects.

4. Conclusions and Implications

A sustainable perspective—theoretical or practical—seems still to be rare in the published articles, even though around half of the articles discuss issues which could be regarded as part of the sustainability field. This is remarkable, since we would argue that it will be hard, or rather close to impossible, to develop business models without sustainability aspects in the future.

Similar conclusions can be drawn based on some of the previous literature reviews on business models [37,45], which reveal many interesting insights on the development of business models, but often lack a discussion about sustainability and sustainable business models. The focus on increased profitability can be viewed as a necessity in the short run, but from a strategic perspective, agri-food entrepreneurs also have to be innovative and create BMI that focus on sustainability.

As discussed in the previous section, research has also revealed limits in business models only focusing on profit [14–16,43]. We argue that it is important to consider sustainability in business model innovation—it could generate a competitive advantage.

To summarize, the complexity and maturity of business model innovation has been addressed in this paper, focusing on the practical and theoretical contributions of business model and sustainability. Many studies reveal insights about the challenges and possibilities firms in the agri-food sector face, but due to an increasing complexity in the field there is a need to develop more systematic approaches that include both innovation and sustainability. The degree of maturity, especially focusing on the sustainability aspect, is in its early phase. As several papers do not even consider sustainability aspects, we argue that awareness has to be developed regarding the value of integrated approaches in order to present sustainable innovations as a competitive advantage for the future.

The conceptual framework for sustainable business model innovation presented and proposed in this paper gives practical as well as theoretical guidelines for the development of sustainable innovations. Based on the literature review, the conceptual framework also highlights the need to include sustainability in business model innovation.

A practical contribution for managers to develop sustainable business models is to more explicitly involve sustainability aspects in the tree building blocks (i) value proposition, (ii) value creation and delivery and (iii) value capture. For ‘value proposition’ and concerns about the product/service, customer segments, and relationships that enhance sustainability it is also relevant to take into account for example, traceability for products and standards for safety and quality. For ‘value creation and delivery’ there are benefits to include not only if the key activities, resources, channels, partners, and technologies focus on sustainability aspects, but also awareness of food-related ethics, ethical consumption. For example, ecological sustainability, social justice, and animal welfare. For ‘value capture’ it is important to not solely focus on if cost structures and revenue streams include sustainability considerations but also include for example, sustainable food systems based on environmental, social, and economic aspects. Another practical contribution relates to the mind-set of the owner-manager including attitudes, perceptions, and intentions to determine level of engagement of social, environmental, and economic aspects.

From a research perspective, it is also of interest to deepen the understanding of the ‘value intention’ of the owner-manager in connection with business model innovation in the agri-industry sector. However, in order to develop this field further, more empirical research is needed that builds upon developed theories and frameworks in the field. Only then will our knowledge of underlying mechanisms grow, which in the long run will lead to the development of a solid theoretical ground.

Acknowledgments: The Knowledge Foundation, Sweden, and The Swedish farmers’ foundation for agricultural research, provided funding for this research project.

Author Contributions: Henrik Barth, Per-Ola Ulvenblad, and Pia Ulvenblad (authors of this paper) designed and developed the conceptual framework for sustainable business model innovation that is based on previous research. These authors prepared the theoretical and practical contributions of the paper, and wrote the paper.

Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A

Article	Business Model and Primary Building Block(s)	Business Model Innovation	Sustainability Aspect	Empirical/Conceptual Paper
[41]	Theoretical business model concept describing the business model as consisting of nine elements consolidated under three themes (=Primary building blocks): value proposition, value creation and delivery, and value capture.	Reducing costs through productivity and efficiency improvements. Industrial ecology principles increasingly embedded in corporate mindset, and sustainability as a driver of competitive advantage.	Theoretical sustainability concept presenting business models for sustainability archetypes.	Empirical—British Sugar Case.
[57]	Practical business model concept, presents an e-Business model. Primary building block—value creation and delivery.	Improvement of existing technologies, and methodologies and standards for an e-Business roadmap.	Practical sustainability concept addressing improvements in traceability for products and standards for public safety and sustainability.	Empirical—case study in the food and beverage sector.
[58]	Practical business model concept. Primary building blocks—value proposition, value creation and delivery, and value capture.	Technological investments, partnerships with non-profit organizations, and development of value chains through partnerships with suppliers.	Practical sustainability concept addressing the design of social businesses.	Empirical—seven cases.
[59]	Practical business model concept. Primary building blocks—value proposition and value creation and delivery.	Practical implications of adopting an ethical orientation in developing a new retail formula.	Practical sustainability concept addressing ethical consumption (e.g., how business models can be developed taking an ethical approach).	Empirical—Eataly Case. Customers and the slow food movement.
[60]	Theoretical business model concept. The definition used: the value creation priorities of the firm with respect to the use of both internal and external resources to create value for and with customers. Primary building block—value creation and delivery.	Initial hypotheses for BM for (i) new firms, (ii) integrated firms, (iii) integrated firms that sell products to other firms, (iv) firms that carry out industrial development in addition to production and commercialization, and (v) firms that produce and sell services.	N/A	Empirical—100 biotechnology firms (food industry, agriculture, etc.).
[61]	Theoretical business model concept with a dynamic perspective that focuses on the evolution of the business model over time. Primary building blocks—value proposition, value creation and delivery, and value capture.	Learning perspective on business model innovation: exploration phase (initial design and testing) and exploitation phase (scaling up the refined business model).	N/A	Empirical—Naturhouse Case.
[62]	Theoretical business model concept. Firms can produce business models for sustainability by (1) creating a higher strategic decision-making process, and by (2) mobilizing their dynamic capabilities around sustainability outcomes specifically. Primary building block—value proposition.	Business models are in focus. Development of innovative business models helps create a sustainable value proposition through the use of dynamic capabilities that engage society in defining ecological and social value.	Theoretical sustainability concept. Business model for sustainable innovation.	Empirical—three cases.
[63]	Theoretical business model concept. Primary building blocks—value proposition, value creation and delivery, and value capture.	In order to gain a new and effective way of competing in a given sector, innovation in all components of the business model are necessary.	Theoretical sustainability concept. Sustainability is focused: increased awareness of food-related ethics (e.g., ecological sustainability, social justice, and animal welfare) creates a shift to higher quality food sold mainly by small specialty retailers.	Eataly Case.

Article	Business Model and Primary Building Block(s)	Business Model Innovation	Sustainability Aspect	Empirical/Conceptual Paper
[64]	Practical business model concept focusing on revenues and costs. Primary building blocks—value proposition, value creation and delivery, and value capture.	This study takes a first look at the business models and economics of Vancouver’s urban farms. Focuses on revenues, costs, financing, and sales models of urban farmers as well as their community connections and benefits.	Theoretical sustainability concept: Sustainable food systems are important for environmental, social, and economic reasons.	Empirical—eight cases; urban farmers in Vancouver, BC.
[65]	Practical business model concept. Primary building block—value creation and delivery.	Business model focused on integrated supply chains.	Practical sustainability concept; food security and continuous employment are discussed	Empirical—Morrisons Case, a UK supermarket chain (pig meat supply chain)
[66]	Theoretical business model concept centred on ownership and control through internalization at one extreme, and externalization at the other. Primary building block—value creation and delivery	Assesses evidence for a plurality of co-existing business models (internalization vs. externalization) in a single industry.	N/A	Empirical—seven case firms from the New Zealand wine industry.
[67]	Theoretical business model concept. Management must consider the firm’s value proposition, choose the activities it will undertake within the firm, select the appropriate technologies, and determine how the firm fits into the value creation network. Primary building blocks—value proposition, value creation and delivery.	The research addresses two specific subjects in the international business literature: country-choice and entry-mode. Changes in business environments influence local firms’ business models and their positioning in global production networks and international markets.	Practical sustainability concept—the Global Alliance for a Safe and Sustainable Agriculture (EurepGAP) is mentioned	Empirical—three cases (one agro-business).
[68]	Practical business model concept, no definition provided. Primary building block—value capture.	Pre-existing differences in the division of productive and reproductive labour, resource control, decision making, and gender biases.	Practical sustainability concept using gender perspective on implications for agrarian livelihood.	Empirical—two commercial agriculture projects.
[69]	Practical business model concept. Primary building block—value creation and delivery.	Presents a regional irrigation business partnership model for sustainable public-private irrigation planning and investment	Practical sustainability concept, presents experience and lessons of sustainable business partnership.	Empirical—four cases tested with the model.
[70]	Theoretical business model concept describing the business model consisting of nine elements. Primary building blocks—value creation and delivery and value capture.	Presents a framework focused on servitization as a competitive advantage.	N/A	Empirical—a case study from the livestock feed manufacturing industry,
[71]	Theoretical business model concept. Primary building blocks—Value proposition, value creation and delivery, and value capture.	Categorization of business models as driven by efficiency or perceived value (a model almost always has elements of both) based on Porter’s generic strategy.	N/A	Conceptual—with some empirical short examples (including “rent a cow”).
[72]	Theoretical business model concept. The competition advantages of new business model originate in quick and flexible responses to market changes, and in the development of unique partnerships Primary building blocks—value proposition, value creation and delivery, and value capture.	Focuses on business model that emphasizes supply chain management.	N/A	Empirical—survey of 109 companies in the tuna longliners industry.
[73]	Theoretical business model concept. Primary building block—value proposition.	This study combines the characteristics of network marketing and business models for e-commerce. This innovative business model in e-commerce suggests a new paradigm for traditional industries.	N/A	Empirical—five cases. Food souvenir producers.

Article	Business Model and Primary Building Block(s)	Business Model Innovation	Sustainability Aspect	Empirical/Conceptual Paper
[74]	<p>Theoretical business model concept.</p> <p>Three major elements of business models can be distinguished: (1) the value proposition, (2) the market segments, and (3) the infrastructure and supply chain.</p> <p>Primary building blocks—value proposition, value creation and delivery, and value capture.</p>	Provides a business model framework for accommodating managerial implications from hedonic price analysis	N/A	Empirical—Analysis of price and quality information in a specialty coffee supply chain.
[75]	<p>Practical business model concept.</p> <p>Primary building block—value creation and delivery.</p>	Vertical integration (vertical business model) (farm to fork) of its activities from primary production to the end user through extensive retail networks.	N/A	Empirical—one case from the beef supply chain,
[76]	<p>Practical business model concept.</p> <p>Primary building blocks—value proposition, value creation and delivery, and value capture</p>	No direct focus on business model. The focus is on entrepreneurship. R&D leaders must develop growth strategies and business models competencies.	N/A	Confectioner Mars Case.

References

1. Dobermann, A.; Nelson, R. Opportunities and solutions for sustainable food production. In *Paper for the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda*; Sustainable Development Solutions Network: New York, NY, USA, 2013.
2. FAO (Food and Agriculture Organization). *Food and Agriculture Organization of the United Nations*; FAO: Rome, Italy, 2009.
3. Öborn, I.; Magnusson, U.; Bengtsson, J.; Vrede, K.; Fahlbeck, E.; Jensen, E.S.; Westin, C.; Jansson, T.; Hedenus, F.; Schulz, H.L.; et al. *Fem Framtidsscenarier för 2050—Förutsättningar för Lantbruk och Markanvändning [Five Scenarios for 2050—Conditions for Agriculture and Land Use]*; Swedish University of Agricultural Sciences: Uppsala, Sweden, 2011; ISBN 978-91-9032-6.
4. European Commission. *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Horizon 2020; Framework Programme for Research and Innovation*: Brussels, Belgium, 2011.
5. Griggs, D.; Stafford-Smith, M.; Gaffney, O.; Rockström, J.; Öhman, M.C.; Shyamsundar, P.; Noble, I. Policy: Sustainable development goals for people and planet. *Nature* **2013**, *495*, 305–307. [[CrossRef](#)] [[PubMed](#)]
6. United Nations. *United Nations Global Sustainable Development Report*; United Nations: New York, NY, USA, 2015.
7. Benbrook, C.M.; Butler, G.; Latif, M.A.; Leifert, C.; Davis, D.R. Organic production enhances milk nutritional quality by shifting fatty acid composition: A United States-wide, 18-month study: E82429. *PLoS ONE* **2013**, *8*. [[CrossRef](#)] [[PubMed](#)]
8. Średnicka-Tober, D.; Barański, M.; Seal, C.; Sanderson, R.; Benbrook, C.; Steinshamn, H.; Cozzi, G. Composition differences between organic and conventional meat: A systematic literature review and meta-analysis. *Br. J. Nutr.* **2016**, *115*, 994–1011. [[CrossRef](#)] [[PubMed](#)]
9. OECD. *Agricultural Policy Reform and the Rural Economy in OECD Countries*; Organization for Economic Co-Operation and Development (OECD): Paris, France, 1998.
10. OECD. *Agricultural Outlook 2004–2013*; Organization for Economic Co-Operation and Development (OECD): Paris, France, 2004.
11. Ulvenblad, P.-O.; Ulvenblad, P.; Tell, J. Green innovation in the food value chain—Will Goliath fix it—Or do we need David? In *Proceedings of the 61st International Council for Small Business (ICSB) World Conference*, New York, NY, USA, 15–18 June 2016.
12. Lawson, R.; Guthrie, J.; Cameron, A. Creating value through cooperation—An investigation of farmers' markets in New Zealand. *Br. Food J.* **2008**, *110*, 11–25. [[CrossRef](#)]
13. Kähkönen, A.-K. Value-net—A new business model for the food industry. *Br. Food J.* **2012**, *114*, 681–701. [[CrossRef](#)]
14. Barnett, M.L.; Salomon, R.M. Does it pay to be really good? Addressing the shape of the relationship between social and financial performance. *Strateg. Manag. J.* **2012**, *33*, 1304–1320. [[CrossRef](#)]
15. Kiron, D.; Kruschwitz, N.; Haanaes, K.; Reeves, M.; Goh, E. The innovation bottom line. In *MIT Sloan Management Review Research Report*; Winter: Cambridge, MA, USA, 2013.
16. Schaltegger, S.; Hansen, E.G.; Lüdeke-Freund, F. Business models for sustainability: Origins, present research, and future avenues. *Organ. Environ.* **2016**, *29*, 3–10. [[CrossRef](#)]
17. Osterwalder, A.; Pigneur, Y. *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers*; John Wiley & Sons: Hoboken, NJ, USA, 2010.
18. Amit, R.; Zott, C. Creating value through business model innovation. *MIT Sloan Manag. Rev.* **2012**, *53*, 41.
19. Chesbrough, H. Business model innovation: It's not just about technology anymore. *Strategy Leadersh.* **2007**, *35*, 12–17. [[CrossRef](#)]
20. Magretta, J. Why business models matter. *Harv. Bus. Rev.* **2002**, *80*, 3–8.
21. Osterwalder, A.; Pigneur, Y.; Tucci, C.L. Clarifying business models: Origins, present and future of the concept. *Commun. Assoc. Inf. Syst.* **2005**, *16*, 1.
22. Teece, D.J. Business models, Business strategy and innovation. *Long Range Plan.* **2010**, *43*, 143–462. [[CrossRef](#)]
23. Johnson, M.N. The time has come for business model innovation. *Leader Leader* **2010**, *2010*, 6–10. [[CrossRef](#)]
24. Zott, C.; Amit, R.; Massa, L. The business model: Recent developments and future research. *J. Manag.* **2011**, *37*, 1019–1042.

25. Klang, D.; Wallnöfer, M.; Hacklin, F. The business model paradox: A systematic review and exploration of antecedents. *Int. J. Manag. Rev.* **2014**, *16*, 454–478. [[CrossRef](#)]
26. McGrath, R.G. Business models: A discovery driven approach. *Long Range Plan.* **2010**, *43*, 247–261. [[CrossRef](#)]
27. Taran, Y.; Boer, H.; Lindgren, P. A business model innovation typology. *Decis. Sci.* **2015**, *46*, 301–331. [[CrossRef](#)]
28. Porter, M.E. *Competitive Advantage: Creating and Sustaining Superior Performance*; Free Press: New York, NY, USA, 1985.
29. Dahmén, E. ‘Development blocks’ in industrial economics. *Scand. Econ. Hist. Rev.* **1988**, *36*, 3–14. [[CrossRef](#)]
30. Chandler, A.D. *Strategy and Structure: Chapters in the History of the American Enterprise*; MIT Press: Cambridge, MA, USA, 1962.
31. Pugh, D.S.; Hickson, D.J.; Hinings, C.R.; Macdonald, K.M.; Turner, C.; Lupton, T. A conceptual scheme for organizational analysis. *Adm. Sci. Q.* **1963**, *6*, 289–315. [[CrossRef](#)]
32. Woodward, J. *Industrial Organization: Theory and Practice*; Oxford University Press: Oxford, UK, 1965.
33. Mintzberg, H. The Structuring of Organizations. In *A Synthesis of the Research*. Englewood Cliffs; Prentice-Hall: Englewood Cliffs, NJ, USA, 1979.
34. Miles, R.E.; Snow, C.C.; Meyer, A.D.; Coleman, H.J. Organizational strategy, structure, and process. *Acad. Manag. Rev.* **1978**, *3*, 546–562.
35. Richardson, J. The business model: An integrative framework for strategy execution. *Strateg. Chang.* **2008**, *17*, 133–144. [[CrossRef](#)]
36. Bocken, N.M.P.; Short, S.W.; Rana, P.; Evans, S. A literature and practice review to develop sustainable business model archetypes. *J. Clean. Prod.* **2014**, *65*, 42–56. [[CrossRef](#)]
37. Lambert, S.; Davidson, R. Applications of the business model in studies of enterprise success, innovation and classification: An analysis of empirical research from 1996 to 2010. *Eur. Manag. J.* **2013**. [[CrossRef](#)]
38. Ulvenblad, P.; Hoveskog, M.; Tell, J.; Ulvenblad, P.O.; Ståhl, J.; Barth, H. Agricultural business model innovation in Swedish food production: The influence of selfleadership and lean innovation. In Proceedings of the DRUID Society Conference 2014 on Entrepreneurship–Organization–Innovation 2014, Copenhagen Business School (CBS), Copenhagen, Denmark, 16–18 June 2014.
39. Beuchelt, T.D.; Zeller, M. The role of cooperative business models for the success of smallholder coffee certification in Nicaragua: A comparison of conventional, organic and Organic-Fairtrade certified cooperatives. *Renew. Agric. Food Syst.* **2016**. [[CrossRef](#)]
40. Markowska, M.; Saemundsson, R.J.; Wiklund, J. Contextualizing business model developments in Nordic rural gourmet restaurants. In *Handbook of Research on Entrepreneurship in Agriculture and Rural Development*; Alsos, G., Carter, S., Ljunggren, E., Eds.; Edward Elgar: Cheltenham, UK, 2011; pp. 162–179.
41. Short, S.W.; Bocken, N.M.; Barlow, C.Y.; Chertow, M.R. From refining sugar to growing tomatoes. *J. Ind. Ecol.* **2014**, *18*, 603–618. [[CrossRef](#)]
42. Boons, F.; Lüdeke-Freund, F. Business models for sustainable innovation: State of-the-art and steps towards a research agenda. *J. Clean. Prod.* **2013**, *45*, 9–19. [[CrossRef](#)]
43. Breuer, H.; Fichter, K.; Lüdeke-Freund, F.; Tiemann, I. Requirements for sustainability-oriented business model development. In Proceedings of the 6th International Leuphana Conference on Entrepreneurship, Lüneburg, Germany, 14–15 January 2016.
44. Stubbs, W.; Cocklin, C. Conceptualizing a “sustainability business model”. *Organ. Environ.* **2008**, *21*, 103–127. [[CrossRef](#)]
45. Wirtz, B.W.; Pistoia, A.; Ullrich, S.; Göttel, V. Business models: Origin, development and future research perspectives. *Long Range Plan.* **2016**, *49*, 36–54. [[CrossRef](#)]
46. Rauter, R.; Jonker, J.; Baumgartner, R.J. Going one’s own way: Drivers in developing business models for sustainability. *J. Clean. Prod.* **2015**, *140*, 144–154. [[CrossRef](#)]
47. Upward, A.; Jones, P. An ontology for strongly sustainable business models: Defining an enterprise framework compatible with natural and social science. *Organ. Environ.* **2016**, *29*, 97–123. [[CrossRef](#)]
48. Rueda, X.; Garrett, R.D.; Lambin, E.F. Corporate investments in supply chain sustainability: Selecting instruments in the agri-food industry. *J. Clean. Prod.* **2017**, *142*, 2480–2492. [[CrossRef](#)]
49. Tell, J.; Hoveskog, M.; Ulvenblad, P.; Ulvenblad, P.O.; Barth, H.; Ståhl, J. Business model innovation in the agri-food sector: A literature review. *Br. Food J.* **2016**, *118*, 1462–1476. [[CrossRef](#)]

50. Hart, C. *Doing a Literature Search: A Comprehensive Guide for the Social Sciences*; Sage Publications Ltd.: New York, NY, USA, 2001.
51. Crossan, M.M.; Apaydin, M. A multi-dimensional framework of organizational innovation: A systematic review of the literature. *J. Manag. Stud.* **2010**, *47*, 1154–1191. [[CrossRef](#)]
52. Kable, A.K.; Pich, J.; Maslin-Prothero, S.E. A structured approach to documenting a search strategy for publication: A 12 step guideline for authors. *Nurs. Educ. Today* **2012**. [[CrossRef](#)] [[PubMed](#)]
53. Seuring, S.; Müller, M. From a literature review to a conceptual framework for sustainable supply chain management. *J. Clean. Prod.* **2008**, *16*, 1699–1710. [[CrossRef](#)]
54. Collin, S.-O.; Johansson, U.; Svensson, K.; Ulvenblad, P.-O. Market segmentation in scientific publications: Research patterns in American vs European management journals. *Br. J. Manag.* **1996**, *7*, 141–154. [[CrossRef](#)]
55. Hörte, S.A.; Barth, H.; Chibba, A.; Florén, H.; Frishammar, J.; Halila, F.; Rundquist, J.; Tell, J. Product development in SMEs: A literature review. *Int. J. Technol. Intell. Plan.* **2008**, *4*, 299–325. [[CrossRef](#)]
56. Fagerberg, J.; Fosaas, M.; Sapprasert, K. Innovation: Exploring the knowledge base. *Res. Policy* **2012**, *41*, 1132–1153. [[CrossRef](#)]
57. Wall, B.; Jagdev, H.; Browne, J. An approach to developing an eBusiness roadmap. *Prod. Plan. Control* **2005**, *16*, 701–715. [[CrossRef](#)]
58. Wilson, F.; Post, J.E. Business models for people, planet (& profits): Exploring the phenomena of social business. A market-based approach to social value creation. *Small Bus. Econ.* **2013**, *40*, 715–737.
59. Sebastiani, R.; Montagnini, F.; Dalli, D. Ethical consumption and new business models in the food industry. Evidence from the Eataly Case. *J. Bus. Ethics* **2013**, *114*, 473–488. [[CrossRef](#)]
60. Nosella, A.; Petroni, G.; Verbano, C. Characteristics of the Italian biotechnology industry and new business models: The initial results of an empirical study. *Technovation* **2005**, *25*, 841–855. [[CrossRef](#)]
61. Sosna, M.; Treviño-Rodríguez, R.N.; Velamuri, S.R. Business model innovation through trial-and-error learning: The Naturhouse Case. *Long Range Plan.* **2010**, *43*, 383–407. [[CrossRef](#)]
62. Iles, A.; Martin, A.N. Expanding bioplastics production: Sustainable business innovation in the chemical industry. *J. Clean. Prod.* **2013**, *45*, 38–49. [[CrossRef](#)]
63. Massa, S.; Testa, S. Beyond the conventional-specialty dichotomy in food retailing business models: An Italian case study. *J. Retail. Consum. Serv.* **2011**, *18*, 476–482. [[CrossRef](#)]
64. Schutzbank, M.H.; Riseman, A. Entrepreneurial urban farms. An urban farming census of Vancouver, British Columbia. *Int. J. Environ. Sustain.* **2013**, *8*, 131–163. [[CrossRef](#)]
65. Bowman, A.; Froud, J.; Johal, S.; Leaver, A.; Williams, K. Opportunist dealing in the UK pig meat supply chain: Trader mentalities and alternatives. *Account. Forum* **2013**, *37*, 300–314. [[CrossRef](#)]
66. Benson-Rea, M.; Brodie, R.J.; Sima, H. The plurality of co-existing business models: Investigating the complexity of value drivers. *Ind. Market. Manag.* **2013**, *42*, 717–729. [[CrossRef](#)]
67. Fleury, A.; Fleury, M.T.L. Local enablers of business models: The experience of Brazilian multinationals acquiring in North America. *J. Bus. Res.* **2014**, *67*, 516–526. [[CrossRef](#)]
68. Tsikata, D.; Yaro, J.A. When a good business model is not enough: Land transactions and gendered livelihood prospects in rural Ghana. *Femin. Econ.* **2014**, *20*, 202–226. [[CrossRef](#)]
69. Khan, S.; Mushtaq, S. Regional partnerships to assist public-private investments in irrigation systems. *Agric. Water Manag.* **2009**, *96*, 839–846. [[CrossRef](#)]
70. Lin, R.-H.; Chen, C.-Y.; Shiou, C.-H.; Chuang, C.-L. Exploratory research on the servitization planning model in manufacturing firms. *Int. J. Electr. Bus. Manag.* **2014**, *12*, 41–53.
71. Chatterjee, S. Simple rules for designing business models. *Calif. Manag. Rev.* **2013**, *55*, 97–124. [[CrossRef](#)]
72. Huang, C.-J.; Kuo, W.-C.; Kung, S.-H. Ultra-low temperature tuna longliners industry in Taiwan: An application of supply chain management. *Int. J. Organ. Innov.* **2013**, *5*, 155–164.
73. Huang, T.-C.; Lee, T.J.; Lee, K.-H. Innovative E-commerce model for food tourism products. *Int. J. Tour. Res.* **2009**, *11*, 595–600. [[CrossRef](#)]
74. Donnet, M.L.; Weatherspoon, D.D.; Hoehn, J.P. What adds value in specialty coffee? Managerial implications from hedonic price analysis of Central and South American e-auctions. *Int. Food Agribus. Manag. Rev.* **2007**, *10*, 1–18.

75. Almas, L.K.; Obembe, O. Agribusiness model in Africa: A case study of Zambeef products PLC. *Int. Food Agribus. Manag. Rev.* **2014**, *17*, 111–116.
76. Meyer, M.H.; Willcocks, N.; Boushell, B. Corporate venturing: An expanded role for R&D. *Res. Technol. Manag.* **2008**, *51*, 34–42.



© 2017 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).