Food Supply Chain's Business-Models Innovation

Subjects: Business and Administrative Sciences

Submitted by: Saeed Nosratabadi

Definition

This paper investigates the contribution of business model innovations in the advancement of novel food supply chains. Through a systematic literature review, the notable business model innovations in the food industry are identified, surveyed, and evaluated. Findings reveal that the innovations in the value proposition, value creation processes, and value delivery processes of business models are the successful strategies proposed in the food industry. It is further disclosed that rural female entrepreneurs, social movements, and also urban conditions are the most important driving forces causing farmers to reconsider their business models. In addition, the new technologies and environmental factors are the secondary contributors in business model innovation for the food processors. It is concluded that digitalization has disruptively changed the food distributor models. E-commerce models and Internet-of-Things are reported as essential factors causing retailers to innovate their business models. Furthermore, consumption demand and product quality are two main factors affecting the business models of all the firms operating in the food supply chain regardless of their positions in the chain. The findings of the current study provide an insight into the food industry to design a sustainable business model to bridge the gap between food supply and food demand.

1. Introduction

It is estimated that the world population would reach to three billion by 2050[1]. Such a dramatic rising population consequently results in increasing the food demand exponentially. On the other hand, it has been revealed that that the energy consumed per person increased from 2250 kcal (9400 KJ) in the 1960s to 2880 kcal (12,000 KJ) in 2015 [2]. Despite the acceptable performance of the global food system in supplying food and decreasing the number of undernourished people, one in eight people was suffering from severe undernourishment in 2014 [3] and 815 million people in 2018 [4]. In addition to the demand side, the research shows that the food supply is facing serious problems due to climate changes. Drought, rising temperatures, changes in precipitation regimes, increase of CO2 levels are named the most critical issues influencing the yields of agricultural production, and these issues are expected to exacerbate in the next 50 years [5]. Such changes subsequently result in socioeconomic factors such as the increase of the prices[6]. Hence, to meet this steadily increasing food demand, the current food supply chain system and activities should be reconsidered.

The food supply chain (FSC) consists of a chain of activities elaborating on how a product is produced and delivered to the final consumers. At each stage of the chain, value or values are added to the product by each player of the FSC (i.e., farmers, processors, distributors, and retailers). Therefore, along with the supply chain, there is a chain, so-called value chain, explaining the value/values added to a product in each step. In other words, numerous actors perform in each stage of the FSC to produce the final product from raw material and deliver it to the final consumers. Each of the entities has its objectives which may be contrasted with the other actors' as the activities of each entity influence the performance of the whole supply chain [7]. The concept of the business model provides the ability to design and analyze the value a business is offering and delivering to its customers [8]. The business model explains the position of a business in the value chain [9]. All the FSC actors have their own business models and they try to do their best to design elegantly and accurately their business models to increase competitiveness. Moreover, social [10], economic, and environmental factors [11] affect the design of business models of businesses in the food supply chain. Therefore, survival in the FSC is hard to manage [12] and it depends on the uniqueness of the business model.

2. Food Supply Chain

The food supply chain (FSC) comprises several stages in which food travels from the farmers to the final consumers[1]. In other words, a network of different actors in each stage of the FSC produces and delivers a final product to meet final customers' needs. Much research is conducted to investigate and analyze the FSC, while the general consensus is that the main FSC actors are farmers, processors, distributors, retailers, and consumers (e.g., [7][13]). In a such FSC, the farmers harvest the initial production, processors produce the final products and package them, distributors supply the final products to the retailers and finally, the retailers are the ultimate places that consumers purchase the products [1]. To analyze the FSC in the current study, the proposed model of Vorst [14] is adopted. According to Vorst[14], the FSC consists of farmers, food processors, distributors, retailers, and consumer handling.

3. Business Model Innovation and Business Model Strategies

The concept of the business model provides the opportunity for the entrepreneurs and organizational decision-makers to analyze the logic of their businesses [15]. Indeed, the business model simply explains what values a business creates, to whom, and how it can make money through the value creation and value delivering processes [15]. Many frameworks and models are offered in the literature to analyze a business model, but all the models strive to explain four main aspects of a business: (1) value proposition, which refers to the products and services the business is providing, (2) value delivering, which implies the mechanisms by which the business is connected with its final customers to deliver the products and services to them, (3) value creation, that points out the main activities which are necessary to create and deliver the values to the customers, and (4) value capturing, which indicates the ways a business makes money through the value creation and delivering processes [16].

According to Gambardella and McGahan[17], business model innovation (BMI) is the adoption of novel approaches to commercializing underlying assets. In other words, when a BMI happens the value proposition and the business logic are changed. Amit and Zott [18] believe that BMI occurs in three ways: (1) doing the current business and bonding the current activities in new ways, (2) innovation in the ways the current activities are executed, and (3) formulating new activities. Many driving forces are mentioned in the literature that induces businesses to innovate their business model. New inventions, human capital, and new technologies are described as the most frequent reasons causing businesses to reconsider their business models [19]. BMI is just not a passive response to the environmental changes, but also it has been considered as a strategy to take advantage of the changes and create competitive advantages for the business [20]. Therefore, the firms in the FSC encounter five strategies to innovate their business model: (1) innovating the value proposition, (2) reconsidering the value delivering mechanisms, (3) innovating the value creation processes, (4) providing new value capturing models, and (5) proposing a quite new business model.

References

1. Wunderlich, S.M.; Martinez, N.M. Conserving natural resources through food loss reduction: Production and consumption stages of the food supply chain. Int. Soil Water Conserv. Res. 2018, 6, 331–339.
2. Pardey, P.G.; Beddow, J.M.; Hurley, T.M.; Beatty, T.K.M.; Eidman, V.R. A bounds analysis of world food futures: Global agriculture through to 2050. Aust. J. Agric. Resour. Econ. 2014, 58, 571–589.
3. Keating, B.A.; Herrero, M.; Carberry, P.S.; Gardner, J.; Cole, M.B. Food wedges: Framing the global food demand and supply challenge towards 2050. Glob. Food Secur. 2014, 3, 125–132.
4. United Nations, Goal 2: End Hunger, Achieve Food Security and Improved Nutrition and Promote Sustainable Agriculture. 2018. Available online: https://www.un.org/sustainabledevelopment/hunger/ (accessed on 3 August 2019).
5. Parry, M.L.; Rosenzweig, C.; Iglesias, A.; Livermore, M.; Fischer, G. Effects of climate change on global food production under SRES emissions and socio-economic scenarios. Glob. Environ. Chang. 2004, 14, 53–67.
6. Popp, J.; Olah, J.; Kiss, A.; Temesi, A.; Fogarassy, C.; Lakner, Z. The socio-economic force field of the creation of short food supply chains in Europe. J. Food Nutr. Res. 2019, 58, 31–41.
7. Higgins, A.; Miller, C.J.; Archer, A.A.; Ton, T.; Fletcher, C.S.; McAllister, R.R.J. Challenges of operations research practice in agricultural value chains. J. Oper. Res. Soc. 2010, 61, 964–973.
8. Nosratabadi, S.; Mosavi, A.; Shamshirband, S.; Kazimieras Zavadskas, E.; Rakotonirainy, A.; Chau, K.W. Sustainable business models: A review. Sustainability 2019, 11, 1663.
9. Mosleh, A.; Nosratabadi, S. Impact of Information Technology on Tehran's Tourism Agencies' Business Model's Components. Int. J. Bus. Manag. 2015, 10, 107.
10. Busby, J.S.; Onggo, B.S.; Liu, Y. Agent-based computational modelling of social risk responses. Eur. J. Oper. Res. 2016, 251, 1029–1042.
11. Borodin, V.; Bourtembourg, J.; Hnaien, F.; Labadie, N. Handling uncertainty in agricultural supply chain management: A state of the art. Eur. J. Oper. Res. 2016, 254, 348–359.
12. Ahumada, O.; Villalobos, J.R. Application of planning models in the agri-food supply chain: A review. Eur. J. Oper. Res. 2009, 196, 1–20.

13. Plà, L.M.; Sandars, D.L.; Higgins, A.J. A perspective on operational research prospects for agriculture. J. Oper. Res. Soc. 2014, 65, 1078–1089.
14. Van der Vorst, J.G. Effective Food Supply Chains: Generating, Modelling and Evaluating Supply Chain Scenarios. Ph.D. Thesis. MIT, Cambridge, USA. 2000.
15. Zott, C.; Amit, R.; Massa, L. The business model: Recent developments and future research. J. Manag. 2011, 37, 1019–1042.
16. Chesbrough, H. Business model innovation: Opportunities and barriers. Long Range Plan. 2010, 43, 354–363.
17. Gambardella, A.; McGahan, A.M. Business-model innovation: General purpose technologies and their implications for industry structure. Long Range Plan. 2010, 43, 262–271.
18. Amit, R.; Zott, C. Creating value through business model innovation. MIT Sloan Management Review, 2012, March 20, 41-53.
19. Grabowska, M. Innovativeness in business models. Procedia Comput. Sci. 2015, 65, 1023–1030.
20. Mészáros, K.; Nosratabadi, S. Business model innovation for transition to the organic agriculture. Acta AVADA 2018, 5, 5–15.

Keywords

business models;business model innovation;food supply chain;logistics;food security;literature review;supply chain management;sustainable development;PRISMA;systematic review