

Sustainable Innovation and Service Quality: An Integrated Overview

Milton F. Barragán-Landy^{1, 2} and Fernando Romero¹

¹University of Minho, Guimarães, Portugal

²University of Cuenca, Ecuador

mfrancisco.barraganl@ucuenca.edu.ec

fromero@dps.uminho.pt

10.34190/ECIE.19.180

Abstract: Sustainability is today a main concern of society. One way of addressing the problem and the need for sustainability is through innovation in products and services that are geared towards the satisfaction of specific needs of organizations, institutions or costumers related to a demand for products, services or product-services that are friendlier to the environment. Sustainable innovation is thus seen as a way of meeting the expectations of consumers and organizations regarding the delivery of green products or services. Stated in this way, there are two concepts that emerge as fundamental to the study of sustainability: the concept of sustainable innovation and the concept of service quality. The research questions that motivate this research are: what is the relationship between sustainable innovation and service quality? Are the expectations of consumers or organizations being met by the supply of green products and services? What are the implications in terms of changes that organizations or consumers must make? Having in mind these questions, the aim of this document is to explore the relationship between sustainable innovation and service quality in the scientific literature, identifying the factors and interactions that are suggested by it. The research methodology used to achieve that objective was based on a literature review, made with a qualitative approach. A four-point scale was developed to assess, in each article, the level of relation between the two concepts. The scale ranges from high to null relation between the two concepts. Most of the articles propose a positive relation between the two concepts, whereby 58% of the articles reviewed have the category of "high relation", and 31% were categorized as having a "medium relation". The implications for organizations may be the incorporation within their organizational culture of a strategy of integration of sustainable innovation and service quality through a mechanism called social and environmental responsibility.

Keywords: Sustainability, sustainable innovation, service quality, review

1. Introduction

Service quality and sustainable innovation are becoming key variables influencing decision-making by customers. On the one hand, innovation represents a mechanism which tries to create alternative ways to, simultaneously, provide sustainable goods and services, satisfy market needs and generate wealth (Kubičková, Benešová and Breveníková, 2016). On the other hand, service quality evaluates the satisfaction of consumers through the analysis of the gap between expectations and perceptions (Parasuraman, Zeithaml and Berry, 1985). Organizations weight the importance of each dimension and adopt mechanisms to improve their competitive advantage (Kivisaari *et al.*, 2013; Mishra, 2017; De Luca *et al.*, 2018) and to satisfy all the stakeholders that have requirements that change due to different factors, many of them related to service and to sustainability (Swann, 2009).

During the last two decades some countries have defined policies and incorporated strategies to care for the environment, growth and economic and social development of nations. However, the incorporation of innovation strategies depends on some factors that are interrelated. Innovation of goods and services will depend on the type of consumers (Linåker *et al.*, 2018). For example according to Sousa-Zomer and Cauchick Miguel (2018) the solution for a sustainable product-service system may be a new sustainable technology, a new model or a new form of governance. Enterprises have also followed strategies that involve sustainable innovation because of the value that is perceived by costumers and which is motivated by social and ecological returns that such innovations generate (Dyck and Silvestre, 2018). Organizations are confronted with social and environmental responsibility, which depend on the policy structure of each country. There are several policy and economic pressures to introduce new ways to produce goods and services and to force the implementation of new paradigms of production. For instance, the European Union is actively seeking to implement practices of the so-called circular economy, as expressed in the following sentence: "[...]the proposed actions will contribute to "closing the loop" of product lifecycles through greater recycling and re-use, and bring benefits for both the environment and the economy with the application of the circular economy strategy in the European Union" (European Commision-EU, 2018). It represents an important concept and an opportunity from which organizations, and consumers, can benefit (Cordón Lagares, García Ordaz and del Hoyo, 2018; de Jesus and Mendonça, 2018).

The satisfaction of consumers has relationships with service quality and depends on the expectations and the perceptions of the consumers in a specific time. The main dimensions of service quality maybe stated as: reliability, responsiveness, assurance, empathy and tangibles (Parasuraman, Zeithaml and Berry, 1985). Several studies have created scales to assess service quality in different kinds of services. The dimension of sustainability of a service maybe defined as: “...offerings that satisfy customer needs and significantly improve the social and environmental performance along the whole life cycle in comparison to conventional or competing offers...” (Tseng et al., 2018). Thus, organizations deal with a mix of strategies that address simultaneously the dimensions of innovation, service quality and sustainability, as a way to respond to changing requirements from the market and to increase their competitive advantage (Meesala and Paul, 2015; Jones, Cope and Kintz, 2016)

The purpose of this document is to explore the relationship between sustainable innovation and service quality, to identify the main interactions implicit in these concepts, and to assess how research has adressed, unveiled or integrated these concepts. The following section describes the research methodology, the third section briefly describes the main concepts and the final section presents an analysis of their integration.

2. Methodology

The present research is entirely based on a literature review. It is an exploratory research and it does not involve a systematic literature review. The databases that were used to collect the literature were Science Direct, b-on (a collection of databases), Web of Science and Scopus. The total publications that were considered to this document were 55 articles. Due to relevance and opportunity considerations, some of the 55 articles are not referenced in this article. The search parameters (Saunders, Lewis and Thornhill, 2016) were the following: i) the language of publications was English for all databases; (ii) the subject area or the principal research thematic was sustainable innovation; (iii) the main business sector was services and with some articles that combined industrial and service sectors; (iv) the publication period was 2013 – 2018; and (vi) the literature type was research articles. The keywords used in the search were – innovation, service, quality, sustainability. Collection of articles was done in the first quarter of 2018.

The main criteria to select the articles was based on the existence of a simultaneous approach to the concepts expressed by the above mentioned keywords. To analyse the documents, an assessment scale was created with the following categories:

1. “High”, the article shows a clear relationship between sustainable innovation and service quality, and there is a direct or positive relationship between the terms.
2. “Middle”, the article shows a relationship between sustainable innovation and service quality, but it is not very clear, and the integration of the concepts is limited.
3. “Low”, the article shows little relationship between sustainable innovation and service quality, and it either does not integrate the concepts or it does not establish any positive relationship.
4. “Null”, the article shows no relationship between sustainable innovation and service quality, or there is a negative relationship between the terms.

3. A short presentation of the main concepts

3.1 Sustainable innovation

The word “sustainable” has different definitions and depends on the context and the adjective that adjoins the word. For the purposes of this article, we adopt the perspective that sustainability is an approach that creates the conditions that allow humans and nature to co-exist at the same time, whereby “human individuals can flourish [...] while diversity, complexity and function of the ecological support system is protected” (Lin et al 2016). To do so, the humanity must create some new ways for the production and consumption of goods and services and think about social and environmental responsibility, an approach usually linked to the concept of sustainable innovation.

Sustainable innovation is also referred to as green innovation or eco-innovation, and defined as “new ideas, behaviour, products and process, applied or introduced by actors, which contribute to a reduction of environmental burdens or to ecologically specified sustainability targets, relative to existing approaches” (Dewick and Foster, 2018).

According to De Luca et al., (2018), innovation is increasingly needed by companies to engage in new market competitiveness and conscientious consumers are demanding sustainable products and services; thus, new characteristics and attributes are requested. Therefore, the organizations need to incorporate innovation and technological change in their organizational process, business model, supply chain and marketing (Swann, 2009; Tseng et al., 2018), involving a mix of product innovation and service quality (Magnusson and Berggren, 2018).

3.2 Service quality

According to ISO 9000 (2015) quality is the “degree to which a set of inherent characteristics of an object meets the requirements”. Service quality is related to the satisfaction of the customers in the short term. The traditional service quality model has five dimensions (Parasuraman et al., 1985): (1) reliability, as the ability to perform the service in a careful and reliable manner, (2) responsiveness, willingness to help clients and provide fast service, (3) assurance, knowledge and attentions shown by employees and their abilities to generate credibility and confidence, (4) empathy, personalized attention with kindness and courtesy, (5) tangibles elements, aspect of physical facilities, equipment, personnel and communication materials. Assessment of service quality by an organization is “to evaluate the satisfaction of consumers through the analysis of the gap between the expectations and the perceptions of the consumers in a specific time after receiving a service” (Parasuraman et al., 1985).

Service and innovation have important intersections, because service and innovation involves innovating in intangible and in products for a more radical service-logic perspective that challenges the conventional attribute-based view of services delivery designs (Verma and Rajagopal, 2013). Thus, new technologies incorporated into new products (goods and services) for improving product quality are in need (Macchion et al., 2017).

4. Sustainable innovation and service quality: exploring the literature

There are few publications that address simultaneously the concepts of sustainable innovation and service quality. Figure 1 shows the distribution of the selected 55 articles by publication year. Since the collection of the articles was done in the first quarter of 2018, this year is not included in the graphic, because the number of articles would not reflect the total publications of that year.

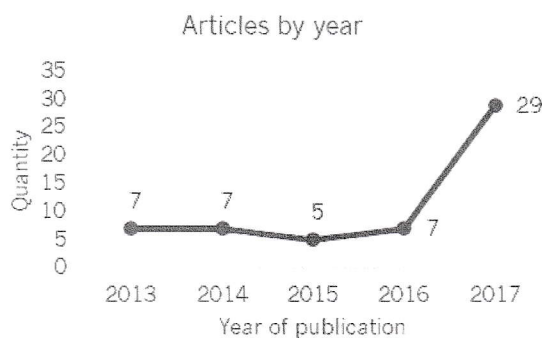


Figure 1: Articles by year of publication

Approximately half (27 papers) of the selected papers addressed specific sectors and were concentrated in only one economic sector. These papers included the following sectors: water utilities, mobile telecommunications, construction, restaurants, fashion industry, software, tourism, hotels, transportation, education, distribution, high-tech, aquaculture and health services. The other half of the selected papers (28 papers) did not focused on specific sectors but instead addressed, in a transversal way, several economic sectors in the same paper, most of them related to the tertiary sector and some related to the secondary sector, emphasizing the links between several economic activities and their approach to sustainable practices, proposing a systemic cross-sectoral relationship between them (Li, 2018; Wood et al., 2018).

Having in mind this distribution, it is not clear if the relationships between the concept of sustainable innovation and service quality is made having in mind a new strategic approach to changing requirements, or if it is made by specific sectors for which this connection is fundamental.

Figure 2 presents the results of the assessment of the articles related to the application of a category according to the scale proposed in the methodology. We see that 58% of the articles (32 papers) that explored the relationships between sustainable innovation and service quality were included in the category "high", i.e., there is a clear relationship between the concepts of sustainable innovation and service quality and there is a direct or positive relationship between the terms.

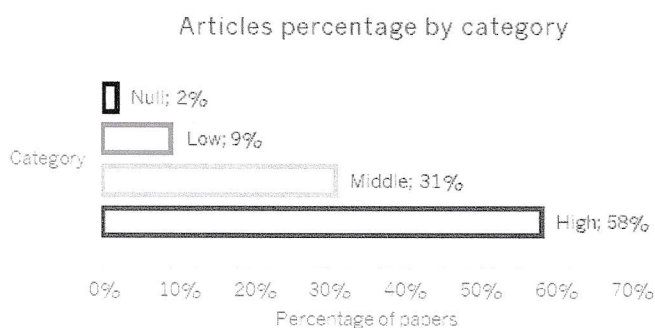


Figure 2: Articles percentage by category

31% of the articles (17 papers) were classified in the category "middle", i.e., there is a relationship between the concepts, but it is not very clear, and the integration of the concepts is limited. 9 % of the articles (5 papers) are in the category "low", i.e., there is little relationship between sustainable innovation and service quality and it either does not integrate the concepts or it does not establish any positive relationship. Finally, 2 % of the articles (1 paper) is in the category "null", i.e., the article shows no relationship between sustainable innovation and service quality, or there is a negative relationship between the terms (Li *et al.*, 2018).

Table 1 is an analytic and synthetic effort that tries to show more clearly how the connection between the concepts of sustainable innovation and service quality are interrelated and intersect each other. Statements from a representative selected set of articles are presented to show explicitly how the literature claims those connections. Additionally to the presentation of the statements, we assign each main argument of each article to one of the three following concepts: the concept of social and environmental responsibility, the concept of service quality and the concept of sustainable innovation. The assignment of only one concept to each article reflects the main preoccupation of the article but not the absence of the other concepts. As a matter of fact, the articles deal, in general terms, with all three concepts, either explicitly or implicitly.

Table 1: Arguments underpinning the relationship between sustainable innovation and service quality

Author / Authors	Principal Argument	Conceptually related to ...
(Juan, Huang and Chen, 2014)	Advances in information, communication, and technology (ICT) have prompted a revolution in the building industry (Xue et al. 2012) - emergence of the so-called "Intelligent Green Building"	Social and environmental responsibility
(Chou, Chen and Conley, 2015)	A new challenge for implementing the "sustainable product-service system" is to combine social sustainability into the visions and indicators of product-service system design (Vezzoli et al., 2012). / In service research, measuring service quality via customer perceptions/satisfaction has been widely used to explain service performances; nevertheless, the criteria of customer perceptions do not include sustainability concerns. (Sustainable product-service efficiency = product-service value / sustainability impact).	Social and environmental responsibility
(Lin <i>et al.</i> , 2016)	An efficient and accurate model that serves as a tool to control the internal operations, monitor learning and growth and improve sustainability and stakeholder related is needed.	Social and environmental responsibility
(Maletič <i>et al.</i> , 2016)	Corporative sustainability is relational with process innovation, product innovation, organizational innovations (specific practices)	Social and environmental responsibility

Author / Authors	Principal Argument	Conceptually related to ...
(Soma <i>et al.</i> , 2017)	Social Innovation as “changes of attitudes, behaviour or perceptions of a group of people joined in a network of aligned interests that, in relation to the group's horizon of experiences, lead to new and improved ways of collaborative action within the group and beyond”	Social and environmental responsibility
(Barbosa, Romero and Cunha, 2018)	The implementation of an innovation action plan in a social economy organization is very demanding but very satisfactory.	Social and environmental responsibility
(Sousa-Zomer and Cauchick Miguel, 2018)	Business model innovation with a social component can: 1. allow close integration with customers and help change their unsustainable consumption behaviour. 2. provide benefits through services and technologies that use fewer resources and generate less waste.	Social and environmental responsibility
(Szijarto <i>et al.</i> , 2018)	Social Innovation as “a complex process of introducing new products, processes or programs that profoundly change the basic routines, resources and authority flows, or beliefs of the social system in which the innovation occurs”	Social and environmental responsibility
(Tseng <i>et al.</i> , 2018)	Sustainable services are described as “offerings that satisfy customer needs and significantly improve the social and environmental performance along the whole life cycle in comparison to conventional or competing offers” (Belz and Frank-Martin, 2009)	Social and environmental responsibility
(Verma and Rajagopal, 2013)	Service innovation involves innovating intangible products for a more radical service-logic perspective that challenges the conventional attribute-based view of services delivery designs (Hunt, 2000a, 2000b, 2002; 2008)	Service Quality
(Lee and Lee, 2015)	Successful innovation in services is considered a key factor for organisational sustainability (Storey and Easingwood, 1999).	Service Quality
(Torabi Farsani <i>et al.</i> , 2016)	Information and communication technology: ICT can help to improve the quality of the service and contribute to the increase of visitors and contribute to greater satisfaction of the guest traveller / ecological innovation.	Service Quality
(Mohd Suki, 2017)	Consumers are encouraged to use green products when they have the knowledge and information from sources like print, digital and social media, friends, and family members that the products have a high level of environmental impact.	Service Quality
(Jin <i>et al.</i> , 2017)	The integration of product-service operations should be integrated to maximize the environmental and economic sustainability of advanced manufacturing.	Service Quality
(Mugion <i>et al.</i> , 2018)	The sustainability mobility as improved service quality in public transport services creates a need or practice of sustainable consumption acquisition, appreciation and appropriation. (Warde, 2016, 2010).	Service Quality
(García-Pozo, Marchante-Mera and Campos-Soria, 2018)	Innovation and greater environmental awareness among consumers generate a demand for differentiated services that leads to better commercial results and, therefore, to higher labour productivity. Companies should make commercial investments with the aim of implementing eco-innovative measures that improve business performance.	Service Quality
(Ilott <i>et al.</i> , 2013b)	Sustainability recommends that future research should use a conceptual framework about sustainability, characterise the innovation, and study the factors that influence changes in implementation over time.	Sustainable Innovation
(Castro and Mateus, 2013)	The space and volumes organization are very important for different areas and can be decisive in environmental, economic and social development of a whole building.	Sustainable Innovation
(Kubičková, Benešová and Breveníková, 2016)	Innovations are under conditions of competition a key instrument of sustainable development of the firm and the entire national economy.	Sustainable Innovation
(Macchion <i>et al.</i> , 2017)	Environmental sustainability practices have a positive and significant impact on the improvement of innovation performance. The development of competitive advantage (in terms of innovation performance) requires robust cooperation among fashion partners.	Sustainable Innovation
(Dyck and Silvestre, 2018)	Sustainable innovation 2.0 is associated with a double bottom line approach to sustainability that seeks to enhance positive socio-ecological externalities while maintaining financially viable organizations.	Sustainable Innovation

Author / Authors	Principal Argument	Conceptually related to ...
(De Luca <i>et al.</i> , 2018)	"Sustainability is considered as the new total quality, and sustainable production is considered to be a means to create innovation while respecting the environments, preserving economic viability and satisfying social requirements" (Germani <i>et al.</i> , 2016)	Sustainable Innovation
(Dewick and Foster, 2018)	The radical eco-innovation is important for sustainable consumption and production system. Changes of leadership are characteristic of innovation system studies, often occurring because of a technological or regulatory or social change.	Sustainable Innovation
(Behnam, Cagliano and Grijalvo, 2018)	Innovation has recently emerged as a persuasive means to enhance sustainability. Sustainable open innovation involving disrupt changes to existing systems by developing a mix of product-service system	Sustainable Innovation
(Li <i>et al.</i> , 2018)	Quality management limits corporate focus on developing the existing production and management systems instead of exploring green innovation.	Sustainable Innovation
(Hojnik, Ruzzier and Manolova, 2018)	The findings strongly indicate that environmental sustainability and the adoption of eco-innovation cannot be neglected when serving foreign markets.	Sustainable Innovation
(Moyano-Fuentes, Maqueira-Marín and Bruque-Cámara, 2018)	There is a strong link between process innovation and sustainability engagement.	Sustainable Innovation
(Rantala, Ukko, Saunila and Havukainen, 2018)	The more an operator values economic sustainability, the more likely it is to adopt technological innovations.	Sustainable Innovation

We believe that the integration of the concepts of sustainable innovation and service quality are mediated by the concept of social and environmental responsibility, and it can be incorporated into organizations through the design of appropriate strategic intentions or business models.

Figure 3 shows the relationship between sustainable innovation and service quality which, through a business model guided by the notion, or concept, of social and environmental responsibility, could reflect a strategic intention in terms of their integration, and a paradigm change within the organization regarding the acknowledgement of the necessity of sustainable innovation for the production and delivery of products and services. A change in customers' expectations and perceptions about products and services with a sustainable innovation content is also necessary.

The introduction of Information and Communication Technologies within the organization will help to improve the desired integration between sustainable innovation and service quality (Torabi Farsani *et al.*, 2016; Abimiku, Timperi, and Blattner, 2016).

It may be necessary to think in business models oriented to the social and environment responsibility through social innovation. According to Soma *et al.*, (2017) social Innovation is defined as "*changes of attitudes, behaviour or perceptions of a group of people joined in a network of aligned interests that, in relation to the group's horizon of experiences, lead to new and improved ways of collaborative action within the group and beyond*". That necessity arises because the complexity of stakeholder interactions concerning innovation is divergent, considering patterns of innovation (Pikkemaat, Peters, and Chan, 2018). Social effects within a community play a very important role in the expectations and perceptions of the consumers that originates multiple requirements (Cucciniello *et al.*, 2015). A systemic change of expectations which has pervasive and multiple effects in many stakeholders may require economic, social and political incentives.

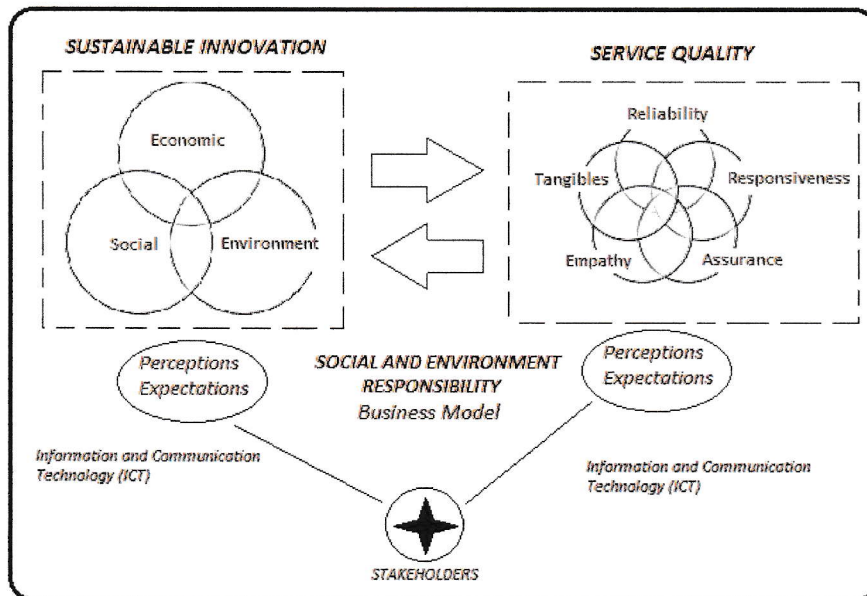


Figure 3: The relationship between Sustainable Innovation and Service Quality

5. Conclusion

Sustainable innovation and service quality are two concepts that have been generally considered in a separate manner. However, there are complementarities and interactions between them that justify a more closer look at their possible integration, having the potential to contribute to respond to fundamental problems of society and to contribute to the common good (United Nations, 2018).

The integration occurs when consumers or stakeholders have an interest on the acquisition of ecological products and services or products/services which were produced as an outcome of a process of sustainable innovation, green innovation or eco-innovation in the organization and which, at the same time, generate a satisfaction in consumers or interested parties who have certain expectations.

Following a literature review, and according to the assessment methodology proposed, a significant majority of the selected articles propose important relationships between sustainable innovation and service quality, and the research on this matter, although still scarce, is increasing, suggesting that there is an important role for this integration to accomplish and an opportunity for further research.

The integration of these concepts provides an important base for the establishment of appropriate strategies which can be incorporated into business models oriented to social and environment responsibility, relying on social innovation (Pansera and Owen, 2018), and information and communication technologies, and with the capability to meet the expectations of both customers and organizations.

A model is proposed that relies on the idea that the integration between sustainable innovation and service quality occurs when customers have expectations regarding products and services which were produced as an outcome of a sustainable process, and that all the stakeholders have incentives that enable them to produce, supply and consume sustainable products and services to satisfy those expectations.

Acknowledgements

This work has been supported by FCT – Fundação para a Ciência e Tecnologia within the Project Scope UID/CEC/00319/2019 and by SENESCYT, University of Cuenca, Ecuador.

References

- Abimiku, A., Timperi, R. and Blattner, W. (2016) 'Laboratory innovation towards quality program sustainability', *Current HIV/AIDS Reports*, 13(4), pp. 202–208. doi: 10.1007/s11904-016-0323-y.
- Barbosa, F., Romero, F. C. and Cunha, J. (2018) 'Innovation, Sustainability, and Organizational Change in a Social Portuguese Organization: A Strategic Management Perspective', in Carvalho, L. C. and Truant, E. (eds) *Maintaining*

- Sustainable Accounting Systems in Small Business*. Hershey, PA, USA: IGI Global, pp. 179–202. doi: 10.4018/978-1-5225-5267-3.ch009.
- Behnam, S., Cagliano, R. and Grijalvo, M. (2018) 'How should firms reconcile their open innovation capabilities for incorporating external actors in innovations aimed at sustainable development?', *Journal of Cleaner Production*. Elsevier Ltd, 170, pp. 950–965. doi: 10.1016/j.jclepro.2017.09.168.
- Castro, M. de F. and Mateus, R. (2013) 'Indoor and Outdoor Spaces Design Quality and Its Contribution To Sustainable Hospital', *CESB13 Conference proceedings*, pp. 1–4.
- Chou, C. J., Chen, C. W. and Conley, C. (2015) 'An approach to assessing sustainable product-service systems', *Journal of Cleaner Production*. Elsevier Ltd, 86, pp. 277–284. doi: 10.1016/j.jclepro.2014.08.059.
- Cordón Lagares, E., García Ordaz, F. and del Hoyo, J. J. G. (2018) 'Innovation, environmental commitment, internationalization and sustainability: A survival analysis of Spanish marine aquaculture firms', *Ocean & Coastal Management*. Elsevier, 151, pp. 61–68. doi: 10.1016/J.OCECOAMAN.2017.10.024.
- Cucciniello, M. et al. (2015) 'Coordination Mechanisms for Implementing Complex Innovations in the Health Care Sector.', *Public Management Review*, 17(7 OP-Public Management Review; Aug2015, Vol. 17 Issue 7, p1040-1060, 21p, 2 Diagrams, 5 Charts), p. 1040. doi: 10.1080/14719037.2015.1029348.
- Dewick, P. and Foster, C. (2018) 'Focal Organisations and Eco-innovation in Consumption and Production Systems', *Ecological Economics*. Elsevier B.V., 143, pp. 161–169. doi: 10.1016/j.ecolecon.2017.07.012.
- Dyck, B. and Silvestre, B. S. (2018) 'Enhancing socio-ecological value creation through sustainable innovation 2.0: Moving away from maximizing financial value capture', *Journal of Cleaner Production*. Elsevier Ltd, 171, pp. 1593–1604. doi: 10.1016/j.jclepro.2017.09.209.
- European Commission-EU (2018) *Implementation of the Circular Economy Action Plan, January 2018*. Available at: http://ec.europa.eu/environment/circular-economy/index_en.htm.
- García-Pozo, A., Marchante-Mera, A. J. and Campos-Soria, J. A. (2018) 'Innovation, environment, and productivity in the Spanish service sector: An implementation of a CDM structural model', *Journal of Cleaner Production*, 171, pp. 1049–1057. doi: 10.1016/j.jclepro.2017.10.087.
- Germani, M. et al. (2016) 'Investigating the sustainability of a high-energy consuming industrial process to achieve total quality', *International Journal of Productivity and Quality Management*, 18(2–3), pp. 301–324. doi: 10.1504/IJPM.2016.076712.
- Hojnik, J., Ruzzier, M. and Manolova, T. S. (2018) 'Internationalization and economic performance: The mediating role of eco-innovation', *Journal of Cleaner Production*. Elsevier Ltd, 171, pp. 1312–1323. doi: 10.1016/j.jclepro.2017.10.111.
- Ilott, I. et al. (2013) 'Exploring scale-up, spread, and sustainability: An instrumental case study tracing an innovation to enhance dysphagia care', *Implementation Science*, 8(1). doi: 10.1186/1748-5908-8-128.
- ISO 9000 (2015) 'Norma ISO 9000:2015, Sistema de gestión de la calidad - fundamentos y vocabulario', p. 58.
- de Jesus, A. and Mendonça, S. (2018) 'Lost in Transition? Drivers and Barriers in the Eco-innovation Road to the Circular Economy', *Ecological Economics*. Elsevier, 145(August 2017), pp. 75–89. doi: 10.1016/j.ecolecon.2017.08.001.
- Jin, M. et al. (2017) 'Impact of advanced manufacturing on sustainability: An overview of the special volume on advanced manufacturing for sustainability and low fossil carbon emissions', *Journal of Cleaner Production*. Elsevier Ltd, 161, pp. 69–74. doi: 10.1016/j.jclepro.2017.05.101.
- Jones, J. N., Cope, J. and Kintz, A. (2016) 'Peering into the Future of Innovation Management', *Research-Technology Management*. Routledge, 59(4), pp. 49–58. doi: 10.1080/08956308.2016.1185344.
- Juan, Y.-K., Huang, S.-J. H. and Chen, H.-T. (2014) 'Applying a Kano quality model for intelligent green building design strategies in Taiwan.', *International Journal of Strategic Property Management*, 18(2 OP-International Journal of Strategic Property Management; Jun2014, Vol. 18 Issue 2, p125-137, 13p), p. 125. doi: 10.3846/1648715X.2014.893266.
- Kivisaari, S. et al. (2013) 'System innovations in the making: hybrid actors and the challenge of up-scaling.', *Technology Analysis & Strategic Management*, 25(2 OP-Technology Analysis & Strategic Management; Feb2013, Vol. 25 Issue 2, p187-201, 15p), p. 187. doi: 10.1080/09537325.2012.759202.
- Kubičková, V., Benešová, D. and Breveníková, D. (2016) 'Relationships between Innovations and Productivity in the Services in the Slovak Economy.', *Journal of Technology Management & Innovation*, 11(2 OP-Journal of Technology Management & Innovation. 2016, Vol. 11 Issue 2, p46-55. 10p.), p. 46. Available at: <http://search.ebscohost.com/login.aspx?direct=true&site=eds-live&db=bth&AN=117223728>.
- Lee, C. and Lee, H. (2015) 'Novelty-focussed document mapping to identify new service opportunities.', *Service Industries Journal*, 35(6 OP-Service Industries Journal. Apr2015, Vol. 35 Issue 6, p345-361. 17p. 1 Illustration.), p. 345. doi: 10.1080/02642069.2015.1003368.
- Li, D. et al. (2018) 'Impact of quality management on green innovation', *Journal of Cleaner Production*. Elsevier Ltd, 170, pp. 462–470. doi: 10.1016/j.jclepro.2017.09.158.
- Li, K. (2018) 'Innovation externalities and the customer/supplier link', *Journal of Banking and Finance*. Elsevier B.V., 86, pp. 101–112. doi: 10.1016/j.jbankfin.2017.09.003.
- Lin, M.-H. et al. (2016) 'Sustainable development in technological and vocational higher education: balanced scorecard measures with uncertainty.', *Journal of Cleaner Production*, 120 OP-, p. 1. doi: 10.1016/j.jclepro.2015.12.054.
- Linäker, J. et al. (2018) 'Motivating the contributions: An Open Innovation perspective on what to share as Open Source Software', *Journal of Systems and Software*, 135, pp. 17–36. doi: 10.1016/j.jss.2017.09.032.

- De Luca, A. I. *et al.* (2018) 'Evaluation of sustainable innovations in olive growing systems: A Life Cycle Sustainability Assessment case study in southern Italy', *Journal of Cleaner Production*, 171, pp. 1187–1202. doi: 10.1016/j.jclepro.2017.10.119.
- Macchion, L. *et al.* (2017) 'Improving innovation performance through environmental practices in the fashion industry: the moderating effect of internationalisation and the influence of collaboration', *Production Planning and Control*. Taylor & Francis, 28(3), pp. 190–201. doi: 10.1080/09537287.2016.1233361.
- Magnusson, T. and Berggren, C. (2018) 'Competing innovation systems and the need for redeployment in sustainability transitions', *Technological Forecasting and Social Change*. Elsevier, 126(July 2016), pp. 217–230. doi: 10.1016/j.techfore.2017.08.014.
- Maletič, M. *et al.* (2016) 'Effect of sustainability-oriented innovation practices on the overall organisational performance: an empirical examination.', *Total Quality Management & Business Excellence*, 27(9/10 OP-Total Quality Management & Business Excellence; Sep/Oct2016, Vol. 27 Issue 9/10, p1171-1190, 20p), p. 1171. doi: 10.1080/14783363.2015.1064767.
- Meesala, A. and Paul, J. (2015) 'Service quality, consumer satisfaction and loyalty in hospitals: Thinking for the future', *Journal of Retailing and Consumer Services*. Elsevier Ltd, 40(October 2015), pp. 261–269. doi: 10.1016/j.jretconser.2016.10.011.
- Mishra, D. (2017) 'Post-innovation CSR Performance and Firm Value.', *Journal of Business Ethics*, 140(2 OP-Journal of Business Ethics; Jan2017, Vol. 140 Issue 2, p285-306, 22p, 1 Diagram, 10 Charts), p. 285. doi: 10.1007/s10551-015-2676-3.
- Mohd Suki, N. (2017) 'Green products usage: structural relationships on customer satisfaction and loyalty', *International Journal of Sustainable Development and World Ecology*. Taylor & Francis, 24(1), pp. 88–95. doi: 10.1080/13504509.2016.1169563.
- Moyano-Fuentes, J., Maqueira-Marín, J. M. and Bruque-Cámara, S. (2018) 'Process innovation and environmental sustainability engagement: An application on technological firms', *Journal of Cleaner Production*, 171, pp. 844–856. doi: 10.1016/j.jclepro.2017.10.067.
- Mugion, R. G. *et al.* (2018) 'Does the service quality of urban public transport enhance sustainable mobility?', *Journal of Cleaner Production*. Elsevier Ltd, 174, pp. 1566–1587. doi: 10.1016/j.jclepro.2017.11.052.
- Pansera, M. and Owen, R. (2018) 'Framing inclusive innovation within the discourse of development: Insights from case studies in India', *Research Policy*. Elsevier, 47(1), pp. 23–34. doi: 10.1016/j.respol.2017.09.007.
- Parasuraman, Zeithaml, V. A. and Berry, L. L. (1985) 'A Conceptual Model of Service Quality and Its Implications for Future Research', *Journal of Marketing*. American Marketing Association, 49(4), pp. 41–50. doi: 10.2307/1251430.
- Pikkemaat, B., Peters, M. and Chan, C.-S. (2018) 'Needs, drivers and barriers of innovation: The case of an alpine community-model destination', *Tourism Management Perspectives*, 25(October 2017), pp. 53–63. doi: 10.1016/j.tmp.2017.11.004.
- Rantala, T. *et al.* (2018) 'The effect of sustainability in the adoption of technological, service, and business model innovations', *Journal of Cleaner Production*. Elsevier Ltd, 172, pp. 46–55. doi: 10.1016/j.jclepro.2017.10.009.
- Saunders, M., Lewis, P. and Thornhill, A. (2016) *Research Methods for Business Students*. Seventh Ed. Edinburgh Gate: Pearson Education Limited.
- Soma, K. *et al.* (2017) 'Social innovation - A future pathway for Blue growth?', *Marine Policy*. Elsevier Ltd, 87(October 2017), pp. 363–370. doi: 10.1016/j.marpol.2017.10.008.
- Sousa-Zomer, T. T. and Cauchick Miguel, P. A. (2018) 'Sustainable business models as an innovation strategy in the water sector: An empirical investigation of a sustainable product-service system', *Journal of Cleaner Production*. Elsevier Ltd, 171, pp. S119–S129. doi: 10.1016/j.jclepro.2016.07.063.
- Swann, G. M. P. (2009) *The Economics of Innovation: an Introduction*. Cheltenham: Edward Elgar Publishing.
- Szijarto, B. *et al.* (2018) 'On the evaluation of social innovations and social enterprises: Recognizing and integrating two solitudes in the empirical knowledge base', *Evaluation and Program Planning*. Elsevier, 66(August 2017), pp. 20–32. doi: 10.1016/j.evalprogplan.2017.08.010.
- Torabi Farsani, N. *et al.* (2016) 'Measurement of Satisfaction with ICT Services Implementation and Innovation in Restaurants (Case Study: Isfahan, Iran)', *Journal of Travel and Tourism Marketing*. Routledge, 33(2), pp. 250–262. doi: 10.1080/10548408.2015.1050540.
- Tseng, M. L. *et al.* (2018) 'A framework for evaluating the performance of sustainable service supply chain management under uncertainty', *International Journal of Production Economics*. Elsevier Ltd, 195(August 2015), pp. 359–372. doi: 10.1016/j.ijpe.2016.09.002.
- United Nations (2018) *Sustainable Development Goals, United Nations Development Programme*. Available at: <http://www.undp.org/content/undp/en/home/sustainable-development-goals.html>.
- Verma, R. and Rajagopal (2013) 'Conceptualizing Service Innovation Architecture: A Service-Strategic Framework', *Journal of Transnational Management*, 18(1), pp. 3–22. doi: 10.1080/15475778.2013.751869.
- Wood, S. L. R. *et al.* (2018) 'Distilling the role of ecosystem services in the Sustainable Development Goals', *Ecosystem Services*. Elsevier B.V., 29, pp. 70–82. doi: 10.1016/j.ecoser.2017.10.010.