

## **Innovation and sustainability: Development of a scale for sustainability-oriented innovation in retailing**

Antonio Marín-García<sup>1</sup>

[antonio.marin@uv.es](mailto:antonio.marin@uv.es)

Faculty of Economics, University of Valencia, Valencia, Spain

Irene Gil-Saura

[Irene.gil@uv.es](mailto:Irene.gil@uv.es)

Faculty of Economics, University of Valencia, Valencia, Spain

M<sup>a</sup> Eugenia Ruiz-Molina

[M.eugenia.ruiz@uv.es](mailto:M.eugenia.ruiz@uv.es)

Faculty of Economics, University of Valencia, Valencia, Spain

Gloria Berenguer-Contrí

[Gloria.berenguer@uv.es](mailto:Gloria.berenguer@uv.es)

Faculty of Economics, University of Valencia, Valencia, Spain

### **ACKNOWLEDGEMENT:**

This research has been developed within the framework of the research project funded by the State Research Agency of the Spanish Ministry of Science and Innovation (Reference no.: PID2020-112660RBI00/ AEI / 10.13039 / 501100011033), the Funding for Consolidated Research teams of the Regional Council of Innovation, Universities, Science and Digital Society (Reference no.: AICO2021/144/GVA) and the Funding for Special Research Actions of Universitat de València (Reference no.: UV-INV-AE-1553911).

---

<sup>1</sup> Corresponding author: Antonio Marín-García, Faculty of Economics, University of Valencia, Valencia, Spain ([antonio.marin@uv.es](mailto:antonio.marin@uv.es))

# **Innovation and sustainability: Development of a scale for sustainability-oriented innovation in retailing**

## **ABSTRACT**

It is the objective of this research is to develop a scale that captures the notion of sustainability-oriented innovation in retailing from the consumer's perspective. For this, a scale is proposed to measure the innovation of services oriented towards sustainability, through exploratory-descriptive research through a survey on 510 consumers of grocery stores. The factor analysis carried out on principal components shows six factors: three dimensions relating to innovation (i.e. product, marketing, and relational innovation), and three dimensions linked to sustainability (economic sustainability, social sustainability, and environmental sustainability), following the Triple Bottom Line theory.

**Keywords:** Innovation, sustainability, scale development, retailing.

## **1. Introduction**

In recent years, sustainability has acquired exponential relevance in business decision-making. The very nature of this factor is a key element for the development of competitive advantages of organisations, mainly due to its ability to attract consumers, who are increasingly aware of environmental and social wellbeing (Watson *et al.*, 2020). In this way, companies are in a position to implement actions related to sustainability that have a direct impact on their productive activity and are also perceived positively by the agents that make up their surrounding environment (Goodman *et al.*, 2017).

Furthermore, innovation is postulated as another basic pillar on which the development of competitive advantages of companies is based (Marín-García *et al.*, 2021) and, therefore, vital for their strategic decisions (Bader and Enkel, 2014). The

advancement of technology and the development of new ways of establishing business-consumer relationships are important changes that cannot be disregarded by the business decision-makers. In this sense, to improve the competitive position of organisations it is essential to progress in the development of innovations that are perceived by consumers. In this way, the literature attempts to differentiate between two main groups of innovations: technological innovations and non-technological innovations. Within these groups, product innovations, marketing innovations, and relational innovations are the ones that create the greatest interest from the consumers' perspective (Lin, 2015; Marín-García *et al.*, 2020).

Some studies transfer their interest towards the transformation of business models in which both innovation and sustainability are key elements. Given this change of direction, special emphasis is placed on the fact that innovation is crucial for sustainable development to exist (Goodman *et al.*, 2017). As a consequence of this new conceptualisation, sustainability-oriented innovation emerges, which implies making deliberate changes in products, processes, organisations, and relationships to generate environmental, social, and economic value (Calabrese *et al.*, 2018; Calabrese *et al.*, 2021; Radi and Shokouhyar, 2021; Watson *et al.*, 2020).

Currently, there is research that transfers this new conceptualisation of business models to companies in the service sector, including retail companies (Friedman and Ormiston, 2022; Martin-Ríos *et al.*, 2021; Watson *et al.*, 2020). These works point out the need to consider this type of business as sustainable trade and innovative trade, where the synergies of both elements are essential for progress and, therefore, it is necessary to examine them as a single element. However, most of these studies address this dichotomy from the perspective of companies (Hattar *et al.*, 2020; Inigo *et al.*, 2020; Martin-Ríos *et al.*, 2021).

From this new stream of study emerges a new conceptualisation, sustainability-oriented service innovation (SOSI). Although this term seems to be acquiring notable relevance among academics and researchers in different fields of study, its development to date is scarce (Calabrese *et al.*, 2018; Watson *et al.*, 2020). In this sense, some studies point to the need to explain the behaviour of this construct in the different fields of interest, as it is vital to know its nature (Calabrese *et al.*, 2018).

Based on the foregoing considerations, this paper aims to carry out a more in-depth analysis of sustainability-oriented service innovation through the development of a scale that includes the factors that define this construct. To the best of our knowledge, no scale has been presented that brings together the dimensions of innovation as well as sustainability from a Triple Bottom Line approach in the context of the retail sector and from a consumer perspective. For this reason, the study seeks to overcome this research gap by proposing a scale for SOSI in retail companies from the consumer's perspective. In particular, the dimensionality of a proposed scale to integrate innovation and sustainability in retail establishments is analysed.

## **2. Theoretical framework**

### *2.1. Innovation in retailing*

The interest in innovation in retailing has traditionally been linked to the need for these types of companies to transform their business models according to the demands of the market at any given time (Sorescu *et al.*, 2011). Organisations find themselves in the position of implementing innovative measures in their businesses, in order to achieve the objective of being more competitive, thus guaranteeing its survival in the current markets and enhancing the ability to expand. All of this will be possible provided that the innovative actions carried out by the businesses are capable of responding to hitherto

unexplored segments and that, moreover, help them generate wealth (Marcon *et al.*, 2017). In this sense, innovation is a fundamental element that makes it easier for organisations to adapt and face the changes that shake up their environment. In this way, the resilience provided by innovation is key in the economic and competitive development of the business fabric (Grewal *et al.*, 2017; Ruiz-Molina *et al.*, 2017), increasing the development of competitive advantages of businesses compared to their competitors, (Pantano, 2014) with the aim of providing consumers with added value (Grewal *et al.*, 2011). Such is the importance of innovation for the progress of organisations that authors like Shankar and Yadav (2011) define it as “*the lifeblood of industries*” (p.1).

Currently, the literature indicates that the development of new business models must be based on two basic pillars: innovation and sustainability (Bilińska-Reformat *et al.*, 2020; Marín-García *et al.*, 2020; Ruiz-Real *et al.*, 2019). In other words, it is not only important to make improvements and/or changes in the products or in the actions that improve relations between the company and the consumer, but these innovative practices have to be sustainable from a triple perspective: environmental, social, and economic.

In the area of marketing, and more specifically, in the commercial distribution sector, the identification of the types of innovation that can be developed has been evolving over time and they comprise different areas of this discipline. In this way, innovations can range from changes in brands, in the nature of establishments, or in each of the tools that make up the companies' marketing mix (Grewal *et al.*, 2011; Grewal *et al.*, 2017; Marcon *et al.*, 2017; Marín-García *et al.*, 2021). The main proposals for classifying the types of innovation have been based on the nature of the innovations (Stagnaro, 2017). In this way, in retail, and considering the perspective of both the company and the consumer, we can identify innovations of a non-technological nature,

as well as technological innovations. Firstly, non-technological innovations gather those actions linked to organizational aspects, marketing initiatives or based on the company-consumer relationship, where technological cues are not prevalent. In contrast, technological innovations refer to those changes introduced both in the supply of goods and in the services developed by the company, and the processes used to carry them out. In these sense, product innovations are directly linked to the development of goods or services. However, implementing these innovations does not necessarily involve the creation of new products, since product innovation may refer to the improvements in the supply of goods and services that companies offer their consumers. Thus, product innovations are understood as those improvements or variations in existing products, or the introduction of new products that have not been marketed to date. Regarding innovation in processes, it is related to the use of new technologies or the application of technologies that the company has not used to date for product development.

Secondly, innovations of a non-technological nature include organizational innovations which occur when there is a change in the organizational or departmental structure of companies. Non-technological innovations also include innovations in marketing, related to changes introduced in any of the variables included in operational marketing decisions or the variables of the marketing-mix: product, price, placement or promotion. Last, when the changes produced are related to the way in which companies deal with their consumers, we refer to relational innovation.

In short, recent studies indicate that the development of innovation in retail cannot be understood without paying attention mainly to two types of innovation: technological innovations and non-technological innovations. Specifically, and from the consumer's perspective, it is vital to talk about product innovations, marketing innovations, and relational innovations (Lin, 2015; Marín-García *et al.*, 2020). In addition, the literature

also shows that these changes made by organisations cannot be successfully conceived without taking into account the sustainability variable.

## 2.2. *Sustainability in retailing*

The study of sustainability in the field of marketing has experienced exponential interest in recent years as a result of the positive effects that sustainability actions carried out by companies can have on attracting consumers, as they are considered a potential source of generating competitive advantages for organisations (Lavorata, 2014; Marín-García *et al.*, 2020; Ruiz-Real *et al.*, 2019). In the highly competitive environments in which retailers operate, it is essential to develop long-term links with consumers. The actions related to sustainability that retailers implement directly affect the perception that consumers have towards this type of establishment and, consequently, their purchasing patterns and behaviour (Claro *et al.*, 2013). In other words, companies can add value to their range of products and services through sustainable practices.

Although it is true that the study of sustainability in the area of marketing is new, and, therefore, there are discrepancies when defining this concept (Ruiz-Real *et al.*, 2019), one of the first conceptualisations formulated in this sense, and which has generated the greatest consensus, has been the proposal by the Brundtland Commission, which in 1987, on the occasion of the presentation of the Report of the World Commission on Environment and Development, defined sustainability highlighting the need to take care of the limited resources so that future generations can continue to enjoy them (Brundtland, 1987).

The dimensionality of the sustainability construct has also been one of the most relevant topics that has occupied many lines in the academic literature. One of the most referenced proposals when addressing the dimensionality of the variable has been

formulated by Elkington (2004), who proposes the theoretical model known as “Triple Bottom Line”, in which one of its fundamental pillars is that the success of entrepreneurial businesses. In this sense, as companies manage to include the three dimensions of sustainability (economic, social and environmental) in their daily activities, they will be closer to achieving a privileged position in the market. Firstly, economic sustainability is related to the ability of companies to carry out their daily activities minimizing their damage to the environment. Regarding social sustainability, it is linked to the level of awareness of organizations with the welfare of society. That is, the direct collaboration of companies with causes related to segments of the population in disadvantaged circumstances, are the central element of this dimension of sustainability. Finally, the importance of the economic dimension for companies lies as a consequence of the financial benefits that they can achieve by carrying out their productive activity in a sustainable manner.

As a consequence of the approach proposed by Elkington (2004), the concept of a sustainable business model emerges, which is based on achieving competitive advantages through the creation of value for the consumer, and at the same time, contributing to the sustainable development of the company and society.

### 2.3. *Sustainability-oriented innovation in organisations*

The conceptualisation of the term “sustainability-oriented service innovation” (SOSI) arose from the need to be able to clearly, uniquely, and concisely identify a research area focused exclusively on the analysis of the links between service innovation and sustainability (Calabrese *et al.*, 2018). However, for a better understanding of this concept, it is necessary to understand how it has been constructed by exploring the following research lines: service innovation (SI), sustainability-oriented innovation (SOI), and product-service system (PSS).

Firstly, sustainability-oriented innovation (SOI) refers to the development of new or improved products and/or processes, changes in the organisation of companies or in decisions that can affect relationships with consumers, generating environmental, social, and economic value (Jay and Gerard, 2015; Watson, 2020). In other words, this type of orientation is more complex to the extent that in order to implement the innovations it is necessary to integrate the dimensions proposed in the Triple Bottom Line formulated by Elkington (2004).

Secondly, the product-service system (PSS) is understood as the process by which companies offer a combination of services and products to obtain greater benefits than if they offered only the product (Reim *et al.*, 2015). This orientation was born with the aim of facing the intense competition that exists in the markets by adding value to companies' offers through services (Halme *et al.*, 2007). In other words, this current of study indicates the possibility of satisfying the needs of consumers through services and not only through the acquisition of goods. Today, its current conceptualisation goes further and PSS is applied to more sustainable solutions (Mylan, 2015), thereby promoting the development of SOSI through the benefits it can generate in the environment, in society, and in the economic conditions of individuals (Xing *et al.*, 2013).

Thirdly, the current of study that analyses service innovation (SI) emerges as a relevant approach to take into account if it is analysed from an environmental perspective (Calabrese *et al.*, 2018). SI must be understood as a multidimensional phenomenon made up of different types of innovations whose purpose is to improve the services offered by organisations, both for their internal clients (employees) and for their external clients (consumers) (Gustafsson *et al.*, 2020). In this way, these innovations can be aligned from the perspective of the product, processes, organisation, or the relationships that the company establishes with all other agents within the environment (Janssen and den

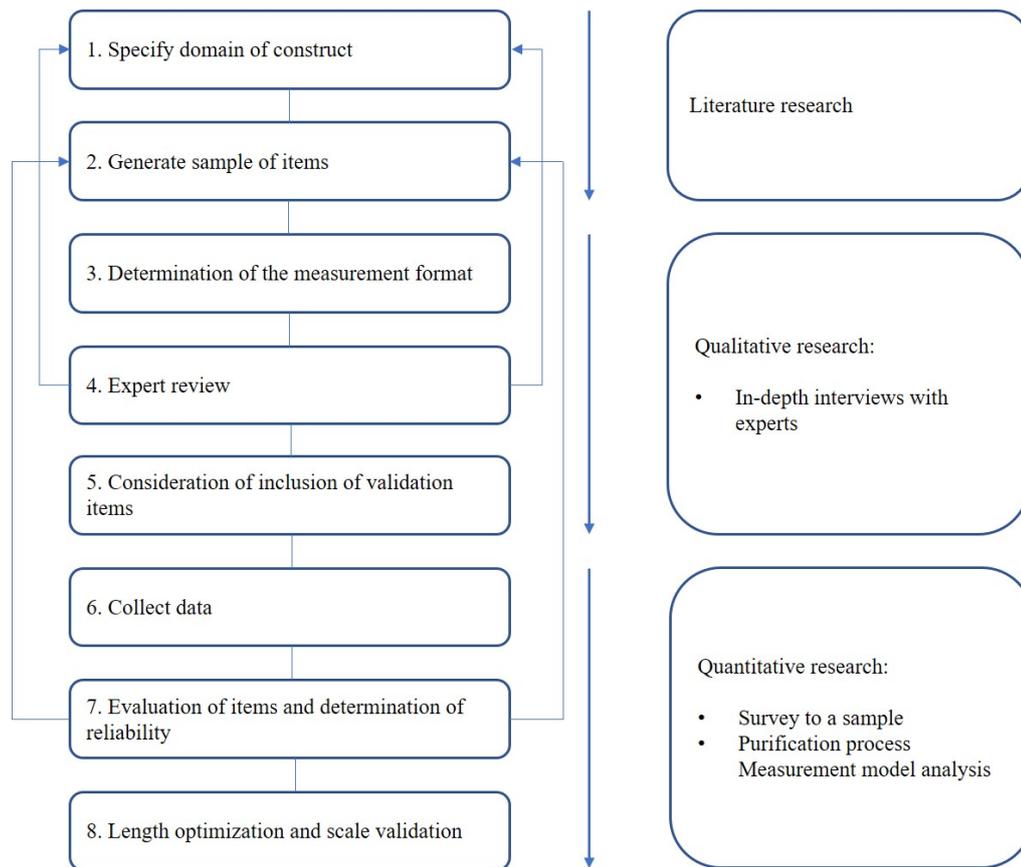
Hertog, 2016). However, although today there is no great progress in this line of action from a sustainable perspective, the literature indicates that its journey can be far-reaching (Gallouj and Savona, 2010).

Finally, Calabrese *et al.* (2018) points out that this construction of the SOSI concept does not completely replace or merge the fields that encompass SOI, SI and PSS, but it does propose that these approaches are important for the development of the SOSI study area. In this sense, its analysis can become an independent research current in different sectors and approached from different perspectives. Therefore, following this new line of research, this paper proposes the analysis of a SOSI scale for retail companies from the consumer's viewpoint.

### **3. Method**

To achieve the proposed objective of this work, i.e. the development of a service innovation scale oriented towards sustainability in retail from the consumer's perspective, a three-phase process divided into eight stages is adapted from previously elaborated scales such as those of DeVellis (1991) and Cantó *et al.* (2021). This process is represented graphically in Figure 1.

#### **Figure 1. Development process of a scale to measure sustainability-oriented service innovation**



Source: Adapted from DeVellis (1991) and Cantó *et al.* (2021).

In particular, in the first phase, the construct has been defined upon analysis of the literature. To do this, first, the concepts of innovation and sustainability in retail were examined, thus identifying the main dimensions that compose them from the perspective of the consumer. Subsequently, the term sustainability-oriented service innovation was analyzed in detail, with special emphasis on how this stream of study has been developed. Subsequently, to align our scale proposal with the theoretical basis of the SOSI framework, a scale has been considered to measure innovation from the consumer's perspective and a scale that includes the dimensions of sustainability proposed by the TBL.

The second phase of this process was carried out in three sub-stages. First, the way to measure the proposed scale was determined. Second, the items that made up the measurement instrument were examined and validated by experts of the University of Valencia. Specifically, the experts have extensive experience as academic professionals in issues related to retail, the service sector, sustainability and innovation. Subsequently, the measuring instrument was tested in order to detect any deficiency.

With all this, the last stage of this process was reached, in which data was collected and subsequent validation of the measurement instrument. Quantitative research is proposed using an ad hoc structured questionnaire. To align our scale proposal with the theoretical basis of the SOSI framework, a scale has been considered to measure innovation from the consumer's perspective and a scale that includes the dimensions of sustainability put forward by the TBL. In this way, the individuals in the study sample were asked to answer a series of closed questions by indicating their degree of agreement or disagreement. On the one hand, to obtain information on the consumers' perception about the innovative initiatives developed by retail establishments, a questionnaire was developed. To do this, the study sample had to assess innovative actions in retail establishments at three levels: product innovations, marketing innovations, and relational innovations. Similarly, information was collected on consumers' perception of sustainable practices implemented by retail establishments.

The scales used to measure the variables under study in this research have been extracted and adapted from various works carried out in the field of marketing. All of them have proven content validity and have been adapted to the characteristics of the context and objectives of the study. Specifically, the items used to measure product innovation, marketing innovation, and relational innovation in stores have been extracted from the innovation scale proposed by Lin (2015). The evaluation of the perception that

the consumer has towards the economically, socially, and environmentally sustainable practices implemented by the establishment was carried out through the scale designed by Lavorata (2014), which has also been used in the context of the retail commercial sector. Finally, the items were measured through a Likert scale (1-totally disagree; 7-totally agree).

Data collection was carried out through a personal survey, using a non-probability quota sampling procedure and the intercept technique. The establishments chosen are part of the main retail food establishments in the Spanish market. The selected commercial formats are grouped into hypermarkets, supermarkets, and discount stores. In total, 510 valid questionnaires were finally obtained. 59.6% of respondents are women. Regarding age, a large number of respondents are between 36 and 55 years old (48.3%). In relation to the level of studies, the segment of the population with university studies stands out (46.7%), followed by those who claim to have secondary education (29%). Finally, 67.7% of the participants in this survey is self-employed or employed. In order to respond to the objective of this work, an Exploratory Factor Analysis is carried out using Principal Component Analysis, hereinafter PCA, with Varimax rotation to observe the grouping of the items used to measure the different variables into factors that make it possible to define the set of variables observed. Previously, the descriptive statistics of the items corresponding to each dimension of the scale were presented (Table I).

**Table I. Items and dimensions of the initial service innovation scale oriented towards sustainability in retail**

Items/dimensions	Mean	SD
IN1. Store X offers many new products.	4.83	1.566
IN2. Store X offers creative own designed products.	4.27	1.661
IN3. Store X offers innovative private brand products.	4.61	1.554
IN4. Store X offers more innovative products than other stores.	4.46	1.655
IN5. Store X offers various products for selection.	4.86	1.633
IN6 STORE X offers many innovative self-services.*	4.58	1.461
IN7. Store X offers more services and more innovative services than other stores.	4.74	1.592

IN8. Store X creates a pleasant atmosphere through store decoration.	4.95	1.428
IN9. Store X has ability to create a different in-store atmosphere.	4.79	1.504
IN10. Store X offers an innovative shopping environment.	4.35	1.448
IN11. Store X offers a creative store design.	4.18	1.552
IN12. Store X offers different promotional programs (discounts, offers...).	5.37	1.564
IN13. Store X offers an innovative promotion mix.	4.79	1.567
IN14. Store X offers more creative promotions than other stores.	4.69	1.728
SN1. STORE X pays producers a fair price.*	4.10	1.094
SN2. Store X pays its employees a decent wage.	4.11	1.224
SN3. Store X pays its employees a minimum wage in developing countries.	4.06	1.106
SN4. Store X monitors the working conditions of its employees.	4.11	1.152
SN5. STORE X sells fair trade products.*	4.01	1.500
SN6. Store X sells organic products.	4.73	1.611
SN7. Store X implements humanitarian actions.	4.59	1.406
SN8. Store X engages in actions directed at social communities.	4.57	1.330
SN9. Store X sells share products (donations to charitable associations).	4.73	1.517
SN10. Store X recycles its products and packaging.	4.30	1.212
SN11. Store X cuts back its consumer of electricity.	4.32	1.095
SN12. STORE X pays attention to the environment.*	4.65	1.162

Note: \* Items deleted in the purification process

#### 4. Results

Firstly, to identify the structure of the relationships between the variables that constitute the Innovation in Sustainability-Oriented Services scale, a PCA with Varimax rotation was carried out to analyse the existence of a factorial structure for SOSI in retail. Before demonstrating the definitive results of the analysis, it was decided to eliminate the items that presented factor loads less than 0.55 (Hair *et al.*, 1999). Specifically, the items eliminated were IN6, SN1, SN5, and SN12. The use of this statistical technique for our data was supported by several indicators based on the correlation matrix, as shown in Table II.

**Table II. Rotated component matrix**

	1	2	3	4	5	6
Product innov.						
Marketing innov.						
Relational innov.						
Eco. sustain.						
Social. sustain.						
Environ. sustain.						

IN1. Store X offers many new products.	<b>0.846</b>	0.118	0.065	0.010	0.184	0.103
IN2. Store X offers creative own designed products.	<b>0.590</b>	0.252	0.284	0.003	-0.081	0.255
IN3. Store X offers innovative private brand products.	<b>0.653</b>	0.379	0.096	0.129	-0.005	0.311
IN4. Store X offers more innovative products than other stores.	<b>0.815</b>	0.209	0.127	0.112	0.028	-0.164
IN5. Store X offers various products for selection.	<b>0.798</b>	0.189	0.112	0.063	0.190	-0.065
IN7. Store X offers more services and more innovative services than other stores.	0.253	<b>0.565</b>	0.292	0.336	0.095	-0.313
IN8. Store X creates a pleasant atmosphere through store decoration.	0.200	<b>0.739</b>	0.261	0.168	0.259	0.004
IN9. Store X has ability to create a different in-store atmosphere.	0.290	<b>0.857</b>	0.040	0.028	0.113	0.008
IN10. Store X offers an innovative shopping environment.	0.216	<b>0.785</b>	0.215	0.171	0.143	0.125
IN11. Store X offers a creative store design.	0.199	<b>0.690</b>	0.355	0.141	0.002	0.223
IN12. Store X offers different promotional programs (discounts, offers...).	0.300	0.341	<b>0.675</b>	-0.076	0.113	0.036
IN13. Store X offers an innovative promotion mix.	0.084	0.172	<b>0.911</b>	0.074	0.015	0.065
IN14. Store X offers more creative promotions than other stores.	0.138	0.201	<b>0.882</b>	0.089	0.118	0.056
SN2. Store X pays its employees a decent wage.	0.081	0.249	-0.019	<b>0.806</b>	0.225	0.168
SN3. Store X pays its employees a minimum wage in developing countries.	0.185	0.166	0.123	<b>0.808</b>	0.112	0.193
SN4. Store X monitors the working conditions of its employees.	-0.045	0.041	0.021	<b>0.886</b>	0.225	0.113
SN6. Store X sells organic products.	0.273	0.142	0.216	0.182	<b>0.763</b>	-0.002
SN7. Store X implements humanitarian actions.	0.039	0.123	-0.017	0.118	<b>0.871</b>	0.077
SN8. Store X engages in actions directed at social communities.	0.013	0.063	0.017	0.129	<b>0.878</b>	0.225
SN9. Store X sells share products (donations to charitable associations).	0.078	0.136	0.089	0.226	<b>0.762</b>	0.345
SN10. Store X recycles its products and packaging.	0.044	0.007	0.158	0.242	0.313	<b>0.756</b>
SN11. Store X cuts back its consumer of electricity.	0.095	0.126	0.011	0.265	0.317	<b>0.717</b>

*KMO: 0.861; determinant: 7855.567; Bartlett's test of sphericity (sign. level): 0.000*

First, to confirm the suitability of the results obtained, we analysed the Kaiser-Meyer-Olkin and the Bartlett's test of sphericity values. Specifically, for the Kaiser-Meyer-Olkin sampling adequacy measure, a value greater than the minimum acceptable

value of 0.5 (KMO: 0.861) is obtained, while the Bartlett's test of sphericity is statistically significant with  $p < 0.001$  (sig. Bartlett's test of sphericity: 0.000). These results allow us to affirm the suitability of this analysis.

The results show the existence of six well-differentiated factors, three of which refer to innovation in retail companies, and the other three which relate to the three dimensions of sustainability. These six factors together explain 76.261% of the total variance. The interpretation of the factors from the factor loadings of the initial variables of the rotated factorial matrix is shown below:

- Factor 1. “**Product innovation**”. This factor explains 15.080% of the variance in the Varimax rotated solution and groups together five indicators, all of them related to the offer of new and innovative products and services developed by companies.
- Factor 2. “**Marketing innovation**”. In relation to the second factor, which presents 15.197% of the variance in the Varimax rotated solution, it comprises five items linked mostly to the design of the store's ambience.
- Factor 3. “**Relational innovation**”. The third emerging factor manages to explain 11.862% of the variance in the Varimax rotated solution and includes three variables linked to the development of innovative promotion systems aimed at customers of the retail establishments.
- Factor 4. “**Economic sustainability**”. This factor, which explains 11.701% of the variance, comprises three items related to sustainable economic practices implemented by organisations.
- Factor 5. “**Social sustainability**”. This factor emerges with 14.625% of the variance in the Varimax rotated solution and groups together four indicators associated with the policies that companies develop focused on social and community wellbeing.

- Factor 6. “**Environmental sustainability**”. Finally, this last factor explains 7.796% of the variance and includes two indicators closely linked to environmentally sustainable actions.

In addition, as shown in Table III, Cronbach's  $\alpha$  reliability coefficient in the factors ranges between 0.809 and 0.894, which is a good result, since all the dimensions show a reliability greater than the minimum of 0.8, following the recommendations of Nunally (1987), Peterson (1994), and Hair *et al.* (1999).

**Table III. Reliability coefficients Cronbach alpha for the factors resulting from the PCA**

<b>Construct</b>	<b>Ítems</b>	<b>A de Cronbach</b>
Product innovation	IN1, IN2, IN3, IN4, IN5	0.860
Marketing innovation	IN7, IN8, IN9, IN10, IN11	0.884
Relational innovation	IN12, IN13, IN14	0.866
Economic sustainability	SN2, SN3, SN4	0.872
Social sustainability	SN6, SN7, SN8, SN9	0.894
Environmental sustainability	SN10, SN11	0.809

## 5. Conclusions

This study has allowed us to obtain a higher level of knowledge about innovation and sustainability in retail from the consumer's perspective. In this way, the results obtained from the exploratory study of the proposed scale to measure sustainability-oriented service innovation in retail companies have provided us with the factorial structure of the proposed construct. Specifically, six factors emerge from the analyses carried out, which we have identified as: product innovation, which refers to technological innovation; marketing innovation and relational innovation, both factors relating to non-technological innovation; and, economic sustainability, social sustainability, and environmental sustainability, all of them linked to the dimensions observed according to the Triple Bottom Line.

However, this study is not exempt from a number of limitations that need to be considered. In relation to the nature of the study, it is an exploratory-descriptive investigation whose main objective was the analysis of the dimensionality of a SOSI scale. To do this, two scales were used, one for innovation and the other for sustainability, which had previously been validated and contrasted in studies focused on the retail sector (Marín-García *et al.*, 2020). Although it is true that the scales used collected the information required to measure innovation and sustainability from the consumer's perspective, following the criteria of Calabrese *et al.* (2018) the validation and contrast of scales based on measurement instruments for SOI, SI and PSS are proposed as a future line of action.

On the other hand, it is important to understand the geographical space where the research has been carried out. Spain is a country where the retail sector is one of the most important from both an economic and social perspective. Retail trade is one of the sectors that generates the greatest contribution to the Spanish economy, and is also an economic activity that contributes significantly to the generation of direct and indirect jobs in the sector. For this reason, it is postulated that there is a need to continue exploring the analyses carried out in other regions where retail is an emerging sector.

In addition, it is also impossible to ignore the role played by SOSI in relation to other important variables in the area of marketing. From the consumer's viewpoint, the brand value and the dimensions associated with this construct are considered a fundamental element in how consumers act towards establishments and the products and/or services offered by them. Therefore, it would be essential to know if SOSI acts as an antecedent or a consequence of this construct. This line of research entails great challenges since the effects of SOSI could be far-reaching in different fields of study related to marketing (Marketing Science Institute, 2020).

Finally, it is also relevant to take into account the time frame in which the research was carried out, prior to the public health and economic crisis resulting from the COVID-19 pandemic. In this sense, society has been exposed to significant changes that directly affect lifestyle and consumption habits. On the other hand, retail companies have made great efforts to adapt to the changes required in this new scenario, introducing important innovations into their businesses. All this leads us to believe that it would be imperative to examine whether consumers' perceptions towards retail establishments have undergone changes since the pre-pandemic stage.

#### **ACKNOWLEDGEMENT:**

This research has been developed within the framework of the research project funded by the State Research Agency of the Spanish Ministry of Science and Innovation (Reference no.: PID2020-112660RBI00/ AEI / 10.13039 / 501100011033), the Funding for Consolidated Research teams of the Regional Council of Innovation, Universities, Science and Digital Society (Reference no.: AICO2021/144/GVA) and the Funding for Special Research Actions of Universitat de València (Reference no.: UV-INV-AE-1553911).

#### **References**

- Bader, K. and Enkel, E. (2014), "Understanding a firm's choice for openness: strategy as determinant", *International Journal of Technology Management*, Vol. 23 N0. 66, pp. 156-182.
- Brundtland, G.H. (1987), *Report of the World Commission on Environment and Development: Our Common Future; World Commission on Environment and Development*, Oxford, New York, NY.

- Calabrese, A., Castaldi, C., Forte, G. and Levaldi, N. G. (2018), "Sustainability-oriented service innovation: An emerging research field", *Journal of Cleaner Production*, Vol. 193, pp. 533-548.
- Calabrese, A., Costa, R., Ghiron, N. L., Tiburzi, L. and Pedersen, E. R. G. (2021), "How sustainable-orientated service innovation strategies are contributing to the sustainable development goals", *Technological Forecasting and Social Change*, Vol. 169, pp. 120816.
- Cantó, M., Frassetto, M. and Irene, G.-S. (2021), "Design orientation in new product development and its measurement", *European Journal of Innovation Management*, Vol. 24 No. 1, pp. 131-149. <https://doi.org/10.1108/EJIM-07-2019-0187>
- Claro, D. P., Neto, S. A. L. and de Oliveira Claro, P. B. (2013), "Sustainability drivers in food retail", *Journal of retailing and consumer services*, Vol. 20 No. 3, pp.365-371.
- DeVellis, R. (1991), *Scale Development: Theory and Applications*, Sage Publications, California.
- Elkington, J. (2004), "Enter the triple bottom line", Henriques, A. and Richardson, J. (Ed.), *The triple bottom line: Does it all add up? Assessing the sustainability of CSR*, Earthscan Publications, London pp. 1-16.
- Friedman, N. and Ormiston, J. (2022), "Blockchain as a sustainability-oriented innovation?: Opportunities for and resistance to Blockchain technology as a driver of sustainability in global food supply chains", *Technological Forecasting and Social Change*, Vol. 175, p. 121403.

- Gallouj, F., Weber, K. M., Stare, M. and Rubalcaba, L. (2015), “The futures of the service economy in Europe: A foresight analysis”, *Technological Forecasting and Social Change*, Vol. 94, pp. 80-96.
- Goodman, J., Korsunova, A. and Halme, M. (2017), “Our collaborative future: Activities and roles of stakeholders in sustainability-oriented innovation”, *Business Strategy and the Environment*, Vol. 26 No. 6, pp. 731-753.
- Grewal, D., Ailawadi, K. L., Gauri, D., Hall, K., Kopalle, P. and Robertson, J. R. (2011), “Innovations in retail pricing and promotions”, *Journal of Retailing*, Vol. 87, S43-S52.
- Grewal, D., Roggeveen, A.L. and Nordfält, J. (2017), “The future of retailing”, *Journal of Retailing*, Vol. 93 No. 1, pp. 1-6.
- Gustafsson, A., Snyder, H. and Witell, L. (2020), “Service innovation: a new conceptualization and path forward”, *Journal of Service Research*, Vol. 23 No. 2, pp. 111-115.
- Hair, J. F., Anderson, R. E., Tatham, R. L. and Black, W. C. (1999), *Análisis multivariante*, Prentice Hall, Madrid.
- Halme, M., Anttonen, M., Kuisma, M., Kontoniemi, N. and Heino, E. (2007), “Business models for material efficiency services: Conceptualization and application”, *Ecological Economics*, Vol. 63 No. 1, pp. 126-137.
- Hattar, C., Batista, L., Mansour, H. and Fakoussa, R. (2020), “The role of sustainability-oriented innovation in food supply chain: a perspective of HR managers”, in *7th International EurOMA Sustainable Operations and Supply Chain Forum*.

- Inigo, E. A., Ritala, P. and Albareda, L. (2020), "Networking for sustainability: Alliance capabilities and sustainability-oriented innovation", *Industrial Marketing Management*, Vol. 89, pp. 550-565.
- Janssen, M. J. and Castaldi, C. (2018), "Services, innovation, capabilities, and policy: Toward a synthesis and beyond", *Science and Public Policy*, Vol. 45 No. 6, pp. 863-874.
- Lavorata, L. (2014), "Influence of retailers' commitment to sustainable development on store image, consumer loyalty and consumer boycotts: Proposal for a model using the theory of planned behavior", *Journal of Retailing and Consumer Services*, Vol. 21 No. 6, pp. 1021-1027.
- Lin, C. (2015), "Conceptualizing and measuring consumer perceptions of retailer innovativeness in Taiwan", *Journal of Retailing and Consumer Services*, Vol. 24, pp. 33-41.
- Marín-García, A., Gil-Saura, I. and Ruíz-Molina, M.E. (2020), "How do innovation and sustainability contribute to generate retail equity? Evidence from Spanish retailing", *Journal of Product & Brand Management*, Vol. 29 No. 5, pp. 601-615.
- Marín-García, A., Gil-Saura, I. and Ruiz-Molina, M.E. (2021), "Understanding innovativeness and commitment to sustainable service practices", *Journal of Services Marketing*, Vol. 35 No. 8, pp. 1092-1103.
- Marketing Science Institute (2020), *2020-2022 Research Priorities*, Marketing Science Institute, New York, NY, available at: [https://www.msi.org/wp-content/uploads/2020/06/MSI\\_RP20-22.pdf](https://www.msi.org/wp-content/uploads/2020/06/MSI_RP20-22.pdf) (accessed 20 December 2021).

- Marcon, A., de Medeiros, J.F. and Ribeiro, J.L.D. (2017), “Innovation and environmentally sustainable economy: identifying the best practices developed by multinationals in Brazil”, *Journal of Cleaner Production*, Vol. 160, pp. 83-97.
- Martin-Rios, C., Hofmann, A. and Mackenzie, N. (2021), “Sustainability-Oriented Innovations in Food Waste Management Technology”, *Sustainability*, Vol. 13 No. 1, pp.210.
- Mylan, J. (2015), “Understanding the diffusion of Sustainable Product-Service Systems: Insights from the sociology of consumption and practice theory”, *Journal of Cleaner Production*, Vol. 97, pp. 13-20.
- Pantano, E. (2014), “Innovation drivers in retail industry”, *International Journal of Information Management*, Vol. 34 No. 3, pp. 344-350.
- Radi, S. A. and Shokouhyar, S. (2021), “Toward consumer perception of cellphones sustainability: A social media analytics”, *Sustainable Production and Consumption*, Vol. 25, pp. 217-233.
- Reim, W., Parida, V. and Örtqvist, D. (2015), “Product–Service Systems (PSS) business models and tactics—a systematic literature review”, *Journal of Cleaner Production*, Vol. 97, pp. 61-75.
- Ruiz-Molina, M.E., Gil-Saura, I. and Servera-Francés, D. (2017), “Innovation as a key to strengthen the effect of relationship benefits on loyalty in retailing”, *Journal of Services Marketing*, Vol. 31 No. 2, pp. 131-141.
- Ruiz-Real, J. L., Uribe-Toril, J., Gázquez-Abad, J. C. and de Pablo Valenciano, J. (2019), “Sustainability and retail: analysis of global research”, *Sustainability*, Vol. 11 No. 1, pp. 14.

Shankar, V. and Yadav, M.S. (2011), “Innovation in retailing”, *Journal of Retailing*, Vol. 1 S87, pp. S1-S2.

Sorescu, A., Frambach, R. T., Singh, J., Rangaswamy, A. and Bridges, C. (2011), “Innovations in retail business models”, *Journal of retailing*, Vol. 87, S3-S16.

Stagnaro, C. (2017), “Competition and innovation in retail electricity markets: evidence from Italy”, *Economic Affairs*, Vol. 37 No. 1, pp. 85-101.

Watson, R., Wilson, H. N. and Macdonald, E. K. (2020), “Business-nonprofit engagement in sustainability-oriented innovation: What works for whom and why?”, *Journal of Business Research*, Vol. 119, pp. 87-98.

Xing, K., Ness, D. and Lin, F. R. (2013), “A service innovation model for synergistic community transformation: Integrated application of systems theory and product-service systems”, *Journal of Cleaner Production*, Vol. 43, pp. 93-102.