Active listening to customers: eco-innovation through value co-creation in the textile industry

Martinez-Martinez, A., Cegarra-Navarro, J. G., Garcia-Perez, A. & De Valon, T

Original citation & hyperlink:
Martinez-Martinez, A, Cegarra-Navarro, JG, Garcia-Perez, A & De Valon, T 2022, 'Active listening to customers: eco-innovation through value co-creation in the textile industry', Journal of Knowledge Management, vol. (In-Press), pp. (In-Press). https://doi.org/10.1108/JKM-04-2022-0309/full/html

DOI 10.1108/JKM-04-2022-0309/full/html
ISSN 1367-3270

Publisher: [Publisher]

Active listening to customers: eco-innovation through value co-creation in the textile industry

Abstract

Purpose

This study contributes to current efforts to design and implement sustainable innovation strategies in organisations from the textile industry. Its aim is to examine how businesses can overcome the current challenges (e.g., lack of resources) of sustainable innovation by the incorporation of green knowledge of customers into their value co-creation strategies. Such strategies are based on actively listening to customers and addressing their expectations with regard to environmental sustainability, in particular in the face of the negative environmental impact of the fast-fashion industry.

Design/methodology/approach

The findings of this study are derived from the analysis of data collected from 208 Small and medium enterprises (SMEs) in the Spanish textile sector. A PLS-SEM analysis was conducted using version 3.3.3 of the SmartPLS software.

Findings

This paper contributes to the literature on environmental sustainability by informing SME eco-innovation through the active listening of their customers' perceptions while implementing value co-creation strategies. The research has found that engaging with customers and actively listening and addressing their expectations can result in the creation of green knowledge that contributes to both incremental and radical eco-innovation in the textile sector.

Practical implications

We found that when organisations from the sector lack eco-innovation capabilities their existing and often their potential customer base are able to acquire new environmental knowledge and transferred it to the business through a process of value co-creation. The research also found that such green knowledge has the potential to lead to eco-innovation in the sector. In other words, the value co-creation process between the textile industry and its customers is a driver of the eco-innovations required to reduce the environmental impact of the sector, helping it address both its sustainability and its ethical challenges.

Originality

This study proposes that co-creation challenges such as the lack of resources, funding, qualified staff or technologies, motivate companies in the textile sector to collaborate with their customers in order to seek joint solutions.

Keywords: active listening to customers, co-creation challenges, radical eco-innovations, incremental eco-innovations, green knowledge

1. Introduction

Green knowledge encompasses the skills and attitudes that enable individuals to improve their relationship with the natural environment and its conservation (Jamison, 2001). On the road to sustainability, customers are seen as sources of green knowledge and translators of such knowledge into innovation outputs (Ghassim and Bogers, 2019). The sharing of green knowledge with stakeholders of the business influences their motivation to become involved in environmental activities. It also provides such stakeholders with opportunities to get involved in environmental efforts (Renwick *et al.*, 2013).

Co-creation is defined as the creation of value through collaboration between the organisation and external experts or stakeholders such as customers, suppliers, etc. (Galvagno and Dalli, 2014; Ranjan and Read, 2014). Guzmán, Paswan and Kennedy (2019) consider that co-creation is a process where two or more parties collaboratively interact to create value. Engaging consumers in value co-creation, therefore, becomes a driver for improved relationships between the business and the natural environment, whereby green solutions are shared and improved by both the business and its consumers (Oertzen *et al.*, 2018). Co-creation can generate a competitive advantage through collaborative innovation, and it is a way to co-create value with their stakeholders, especially their consumers (Samant and Sangle, 2016).

The process of actively listening to customers and co-creating value is especially valid in the textile sector, where there has been a significant increase in the production of low-cost clothing that mimics current luxury items, leading to significant volumes of waste every year. One argument in the literature points toward the need for collaboration between consumers and the industry in the design of what is perceived by consumers as an imperative in order to minimise waste, save resources, and introduce eco-innovations to protect the environment (Vorbach *et al.*, 2019). This study proposes that co-creation challenges such as the lack of resources or technologies (Ghisetti *et al.*, 2017) motivate companies in the textile sector to collaborate with their customers in order to seek and jointly implement solutions (Dearing, 2000).

The concept of 'listening' in management literature has been studied from different angles. For example, while Cegarra-Navarro and Sánchez-Polo (2009) refer to the concept of a 'listening environment' as one in which managers listen to customers and other staff, from the point of view of information processing, active listening implies the need for the receiver to correctly decode and retain the sender's message (Glynn *et al.*, 2003). In leadership education, listening is also regarded as an enabler of skill development and teamwork (Clark, 1999), which can also have a positive impact on strategic change in the context of management (Rutter, 2003). Waidenfels (1995) was of the view that listening is key for any effort to understand and respond to others' needs. In this view, Jacobs and Coghlan (2005) refer to listening as a facilitation technique that helps unlock the self-analytical problem resolution potential of customers. From the standpoint of marketing, listening to the customer is a way of expressing open-mindedness towards their points of view and transferring these into internal issues (Berry and Parasuraman, 1997).

Although some studies have shown narrative listening as a passive activity (Welsch, 1997), the only way to perform active listening is by confirming the receiver understands what is said by the sender (Glynn *et al.*, 2003). In this case "actively listening to customers" is not just about nodding the head or looking attentive (Min *et al.*, 2021; Rutter, 2003). Instead, companies have to demonstrate they have taken the customer's point of view seriously (Jonsdottir and Fridriksdottir, 2020), for instance by transforming suggestions from customers into new

routines and processes. This view of active listening is somehow similar to "open-mindedness", which means being receptive to new ideas and different opinions or points of view (Kmieciak, 2019). When we try to measure this kind of open-mindedness, we can consider two approaches, namely the individual and the organisational approach. While an open-minded person tries to listen to positive and negative critics (Reijseger *et al.*, 2017), an open-minded context would try to maintain a proper balance between the exploitation of current ideas and the exploration of new ones (Cegarra-Navarro and Cepeda-Carrión, 2008).

Based on the above, this study proposes the organisational approach and suggests the concept of "active listening to customers", as a balance in accommodating suggestions from both profitable and potential customers. From an organisational perspective, one great way to start being open-minded is to give your customers the opportunity to be heard (Caspersz and Stasinska, 2015). In the current study, the concept of active listening includes serving our profitable and potential customers with the best of attitudes (Cegarra-Navarro *et al.*, 2020; Day and Schoemaker, 2004).

Although the green knowledge created by the company-customer relationship encourages eco-innovations (Pavlova, 2018), no previous study has investigated how active listening to customers' ideas can help overcome the challenges of the co-creating process such as lack of financing or lack of knowledge. As pointed out by (Cegarra-Navarro *et al.*, 2020; Martínez-Martínez *et al.*, 2021), there is an important factor that every company must do if it wants to achieve the benefits of green knowledge: listen to its customers. This study proposes that active listening to customers helps to overcome co-creation challenges.

Eco-innovation refers to the process of developing new products, production processes, or business models that have a low environmental impact during their life cycle (Triguero *et al.*, 2013). One of the great dilemmas faced by eco-innovation scholars and practitioners is the need to balance incremental and radical eco-innovation (Li *et al.*, 2008). In a way, this is perceived as the difference between driving a hybrid and an electric car, which depends on the very specific and up-to-date knowledge of the technology and also the context where the car will be driven. In the case of eco-innovations, the green knowledge defined above can play an important role in balancing incremental and radical eco-innovations (Barber, Taylor and Strick, 2009; Whyte, 2013; Bossle et al., 2016; Pavlova, 2018; Islam and Managi, 2019).

The question that arises is how green knowledge is created in the context of SMEs when the main goal is to contribute to co-creation value and eco-innovation in the textile industry. The findings of this study are derived from the analysis of data collected from 208 CEOs from the Spanish textile sector. A PLS-SEM analysis was conducted using version 3.3.3 of the SmartPLS software. This study contributes to current efforts to design and implement sustainable innovation strategies in businesses in the textile industry. By examining the relationships between eco-innovation strategies in SMEs within the sector and active listening to customers toward environmental sustainability, the research helps businesses from the textile industry overcome the current challenges of sustainable innovation through customer engagement in value co-creation. The results gain importance, particularly in the face of the growing and negative environmental impact of the fast fashion industry.

The paper is structured as follows: The proposed theoretical framework is outlined in the following section. In section 3, details of the methodology and the survey used to collect the data to test the theoretical model are presented. The results of the data analysis are outlined in

section 4, followed by the discussion of the results and the theoretical and managerial implications in section 5. Finally, the conclusions are in section 6.

2. Conceptual framework

2.1.Sustainability and the textile sector

The environmental challenges directly or indirectly related to the textile industry are multiple. Climate change is often mentioned in the media as related to human activities in business organisations, which often contribute directly to global challenges (Ahmad *et al.*, 2021). According to the UNCCD (2019), the textile industry is the second most polluting sector in the world. Although there is a range of estimations, a recent report found that fashion alone generates 4% of worldwide's waste each year, representing 92 million tons of waste annually (Kumar *et al.*, 2020). This is a significant risk for the planet, likely to have a direct impact on changes in climate and environmental issues. One of the foreseeable consequences that might impact the world population would be the changing weather patterns, for instance. Preliminary studies showed that pollution could have even more negative effects in the case of health emergencies and pandemic crises (Qu *et al.*, 2020). These effects will also cause devastating impacts on social as well as economic aspects if effective actions are not taken to mitigate or avoid environmental problems. Environmental concerns hence are a challenge for companies in their activities, but also for society. It should be noted that the global textile sector is experiencing in general terms rapid growth, just as it is doing in Spain. It was estimated that worldwide, the production of fibres for the textile industry would still increase by 3,7% a year by 2025 (Islam *et al.*, 2021). Addressing the challenges of this research context is therefore essential to finding solutions (Davison and Martinsons, 2016).

The problem of the textile industry does not only resides in the production methods, but also in the consumption patterns. Fashion cycles are getting shorter and shorter to adapt to new coming trends, and fashion garments become obsolete sooner and sooner. It is the so-called fast fashion industry where the philosophy of use and disposal prevails. Cheap prices encourage consumers to buy impulsively, as they will experiment the shopping satisfaction without any financial commitment. Garments are not a need but a hedonistic pleasure, which led to the estimate that 40% of the products bought would never be worn (Daystar *et al.*, 2019). However, more and more stakeholders are starting to show concern about environmental deterioration, and demand that companies implement more sustainable businesses, processes and products (Brewer, 2019; Buzzo and Abreu, 2019; Partzsch *et al.*, 2019; Shao and Ünal, 2019).

SMEs play an important role in contributing to sustainable development by innovating and introducing sustainable products (Chen and Liu, 2020; Scuotto *et al.*, 2017; Singh *et al.*, 2020). Due to their natural limitations, SMEs are particularly forced to use external knowledge creation sources (Durst and Edvardsson, 2012; Gangi *et al.*, 2020). In SMEs different stakeholders as consumers have a role to play to create green knowledge, hence the opportunity for co-creation and creating value for them and SMEs (Galvagno and Dalli, 2014).

2.2.Co-creation challenges and active listening to customers

The environmental issues related to the textile industry are a shared responsibility between the consumers, whose consumption is far from being sustainable, and companies that are meeting the market demand with the lowest costs possible. Co-creation hence makes sense of those shared views to find a way to act and consume more sustainably while creating value for both

parties. Co-creation in the fashion industry can help sustainability prospects by offering a tailored product and availability to promote and enhance customer experience, which can represent a competitive advantage (Roser *et al.*, 2014).

The most common barrier to value co-creation is the lack of funds, cash and equity, limited access to external funding sources, and access to the financial market (Agrawal and Rahman, 2015; Souto and Rodriguez, 2015). Eco-innovation in itself is an expensive process, as it requires investing in new knowledge, technology, structures and qualified personnel. Although co-creation is a solution to mitigate these costs by collaborating more effectively, engaging with consumers implies a willingness from the firm to innovate and grow. Value creation can only occur if the project can be funded and profits can be made (Aguilera-Caracuel and Ortiz-de-Mandojana, 2013; Bly *et al.*, 2015).

A second considerable barrier to co-creation is the lack of knowledge, whether it is about sustainability, available technology, consumers' expectations or the market status for these products. On co-creation specifically, the limited knowledge can be translated by an inadequate perception of capabilities required to co-create, a lack of market intelligence (strategy, planning) or unawareness of policies and culture (Agrawal and Rahman, 2015).

The third factor perceived as a barrier to co-creation is the lack of qualified personnel with a potential impact on decision making regarding co-innovation, co-creation of marketing and co-production (Hewett and Shantz, 2021; Shulga and Busser, 2020). Employees are one of the most valuable internal assets of a company. The resources they provide are multiple, whether they are core resources (knowledge, capacity to perform the job), augmented resources (teamwork, consumer-consciousness, company's values awareness), add-on resources (personal engagement, innovative ideas, feedbacks provision), or peripheral resources (pride to belong to the firm, self-fulfilment) (Agrawal *et al.*, 2015; Amin *et al.*, 2021; Boukis and Kabadayi, 2020).

The last barrier perceived is the lack of technology, which can include physical technology (inadequate structures, plants, equipment or machines), organisational technology (absence of cooperation partners, valuable networks, managerial mechanisms, information systems or platforms for co-creation), or competitive technology (crucial when markets are dominated by already established firms and when market demand is uncertain) (Agrawal and Rahman, 2015) Developing such technologies represent a significant risk for a company due to their expensive nature. It is a development that might be financially unaffordable and without a guarantee of increased revenue.

To summarise, co-creation is a tool with a considerable potential to collect new green knowledge, perspectives and ideas, and create a close relationship with active listening to customers and stakeholders in general. But the challenges companies are facing are multiple and to some extent justify the inertia of the textile industry when it comes to eco-innovation. Collaborating with consumers implies that companies become able to listen to external ideas and feedback, and are seeking external knowledge and resources to approach their innovative behaviours. Active listening to customers consists of nothing less than filtering all the noise that arises from active communication with them and extracting good ideas for the future of the company (Caspersz and Stasinska, 2015; Cegarra Navarro *et al.*, 2013; Garver, 2001). For instance, some companies launch online customer communities to co-create new business models, products or new solutions to challenges in our society with active listening to customers.

On these bases, the following hypothesis is proposed:

H1: Co-creation challenges positively influence active listening to customers

2.3.Why is active listening to customers crucial to developing green knowledge?

Active listening to customers implies not only an effort to hear customers but also to listen and understand the ideas they propose (Min *et al.*, 2021). Active listening helps understand customer needs, at a time when customer awareness of sustainable products has increased very rapidly during the last few years (Joshi and Rahman, 2015; Martínez-Martínez *et al.*, 2022; Wijaya and Paramita, 2021). In this context, active listening to customers enables organisations' environmental and social responsiveness (von Krogh *et al.*, 2000; Prahalad and Ramaswamy, 2004), allowing for the questioning of assumptions and the adoption of new knowledge and ideas, including green knowledge.

Capturing green knowledge from consumers is crucial for co-creating eco-innovation. For example, it leads to a long-term engagement of consumers with the company. The more confident consumers are about their ability to influence the business, the more willing they will be to engage with the company to co-create value, leading to better profitability and customer lifetime value (Cambra-Fierro et al., 2021). The co-creation process allows building awareness and understanding of the market situation from different viewpoints. By sharing their green knowledge and finding a trade-off between what they believe in and what is feasible, consumers' ideas and engagement create a network suitable for eco-innovation promotion. (Eikebrokk *et al.*, 2021). Furthermore, consumers who are engaged with the firm and willing to voice their concerns and expectations, are able to take action as co-diagnosers, co-problem solvers and co-sharers, increasing the opportunities for firms to use these available resources (Tian *et al.*, 2021).

Within a sector where eco-innovation is expected to be part of a strategy towards a more sustainable future, active listening to customers becomes key for a flow of green knowledge between organisations and consumers. Through co-creation, these ideas, resources and knowledge can be shared to be later integrated into new routines and processes. From a company perspective, active listening to customers is an asset that helps offer proactive social and environmental responsiveness and sustainable awareness (Flores, 1993). It can therefore be argued that both firms and consumers do benefit from the consumption of knowledge and from continuous environmental learning when this results in value creation (Zhang and Meng, 2021). The following hypothesis is formulated:

H2: Active listening to customers positively influences the creation and reuse of green knowledge

2.4.Green knowledge, incremental and radical eco-innovation

According to (Jamison, 2001), green knowledge is not so much about the environmental conditions surrounding us but more about how we should operate, taking into account the pursuit of more sustainable paths for socio-economic development. In other words, all individuals need to develop green skills if they are to create green knowledge (Pavlova, 2018) and be able to contribute to sustainable growth. Green knowledge represents the fuel of a green economy and eco-innovation plays a crucial role as a driver of a green and circular economy (Horbach *et al.*, 2013; Renwick *et al.*, 2013). Green knowledge is defined in this study as the

result to develop and applied of green skills in order to understand environmental problems and look for solutions.

According to Pavlova (2018), a major aspect of stakeholder cooperation for green knowledge creation is eco-innovation. Eco-innovation is understood here from two perspectives. The first radical eco-innovation is considered the fundamental or revolutionary changes in existing green products, services, or processes using environmental technology that departs from current green knowledge (Dewar and Dutton, 1986a; Subramaniam and Youndt, 2005). The second perspective is defined as incremental eco-innovation, considered as small improvements or adjustments to existing green products, services, or processes. Such improvements are often supported by the adoption of environmentally-friendly technologies that reinforce, modify, or extend current green knowledge, and follow the tightening of environmental regulations, increasing sanctions and increasing environmental awareness. In these cases, companies have turned to green incremental innovation by transforming and upgrading their processes and products to the emerging legislation and requirements of the stakeholders (Zhang et al., 2022). Incremental innovation is less expensive than radical innovation and could be a feasible option when organisations only seek to adapt their processes and products to new conditions. However, radical eco-innovation can result in new products and processes, and this could provide the business with a competitive advantage.

Depending on the degree of originality and novelty of the green knowledge used, the literature usually proposes a distinction between radical and incremental eco-innovations (Azzone and Noci, 1998; Horng *et al.*, 2017). From the point of view of incremental eco-innovation, green knowledge can be used to improve the current processes of companies in order to sustain sales and reduce their impact on their environment (Dewar and Dutton, 1986; Sheng and Chien, 2016). On the other hand, in the case of radical eco-innovation, companies will use their green knowledge to completely redefine their processes and thus reduce their impact on the environment (Hazarika and Zhang, 2019; Klewitz and Hansen, 2014).

It is important to note that small incremental eco-innovations make up of small applications that improve the user's experience may drive radical eco-innovation (Hazarika and Zhang, 2019; Klewitz and Hansen, 2014; Könnölä and Unruh, 2007; Mont *et al.*, 2014a). For example, it is well known the case of companies that start with a solar water heater (incremental eco-innovation) to get hot water and end up changing the energy model of the company by putting solar panels on its roof and not only producing energy for the company but also selling the surplus to electricity companies (radical eco-innovation).

Multiple types of eco-innovation can emerge from co-creation strategies. These can be linked to the production processes, leading to cleaner production and better eco-efficiency. They can be organisational, impacting future strategic behaviors, supply chain management and approaches to reflexive innovation processes. Lastly, they can directly impact the product directly through eco-friendly designs, enhanced life-cycle capacities or fair-trade materials (Klewitz and Hansen, 2014). Therefore, the choice between incremental and radical eco-innovation mostly depends on the adopted strategic sustainability behaviours. The more resistant a company will be to external stimulus and environmental issues beyond compliance, the more likely eco-innovation will be incremental.

However, the context of a crisis has been found to facilitate the emergence of radical innovations. For instance, the coronavirus COVID-19 pandemic led to radical innovations in different processes and services across different socio-economic environments. More recently,

as the cost of energy has increased due to the war in Ukraine, countries, governments and consumers have turned their attention to green energy sources. It is therefore plausible to argue that radical eco-innovations are significantly influenced by the external environment and sustainability-rooted behaviours. Overall, the kind of eco-innovation that is suitable for a particular business is determined by elements including market and management demand, available resources and green knowledge (Hazarika and Zhang, 2019; Klewitz and Hansen, 2014). Mont et al., (2014) highlighted that consumers have the power to put pressure on companies for the development of new environmental and social processes, increase their responsible business behaviours and adopt more sustainability-oriented offers. Stakeholders can encourage businesses to explore new processes, products and market opportunities (Könnölä and Unruh, 2007) from a new perspective. Hence, it can be argued that in a situation of value co-creation, the green knowledge provided by consumers may have a direct impact on the emergence of radical innovations in the business.

As noted above, incremental eco-innovation lies in creating value on an existing product or service by incorporating green knowledge (Jamison, 2001; Chan et al., 2014), by using green knowledge new improvements are incorporated (Tee *et al.*, 2017), and from them, incremental innovations arise to achieve sustainable growth (Dewar and Dutton, 1986; Sheng and Chien, 2016). Meanwhile, radical eco-innovation implements an unknown change based also on prior green knowledge (Fussler and James, 1997). For example, our knowledge of environmental degradation tells us that radical innovations are needed to enable clean production processes that minimize the consumption of energy and natural resources. Bearing in mind these ideas, although part of green knowledge supports radical changes, another part of it supports incremental changes that allow companies to adapt and reconvert themselves into sustainable centers (Dewar and Dutton, 1986; Carrillo, del Río and Könnölä, 2011). In other words, incremental eco-innovation can be a bridge between *green knowledge* and radical eco-innovation. While incremental eco-innovation helps validate and use green knowledge with predictable results that give managers greater confidence, it also favors the creation of sustainable needs among managers that ultimately push for radical changes in their production models. For example, managers can demand the implementation of radical action plans for the elimination of hazardous substances that result from the implementation of recycling practices.

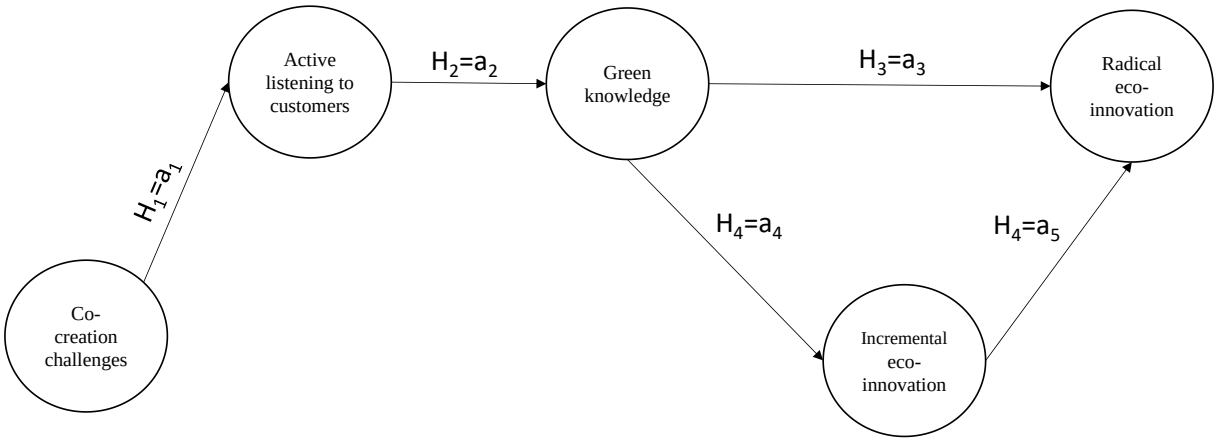
Based on the above, we propose the following hypotheses.

H3: Green knowledge positively influences radical eco-innovation

H4: Incremental eco-innovation knowledge positively mediates the relationship between green knowledge and radical eco-innovation

As shown in Figure 1, the aim of our study was to know how co-creation challenges can help customers' open-mindedness and create green knowledge, as well as to explore how it can impact incremental or radical eco-innovations for companies.

Figure 1: Theoretical model



Methodology

2.5.Data collection

The textile sector in the Community of Valencia, Spain, was the subject of our data collection. A total of 4,844 companies related to the textile industry at the end of 2019 in the Community of Valencia, which represents 24.09% of the overall Spanish textile market (INE, 2020). The textile industry in the Community of Valencia produces high quality fabrics and accessories for the home and interiors sectors, plus a wide range of technical textiles and high-performance fabrics used in industries such as medical, defence and aerospace.

A list of 760 SMEs provided by the SABI (Sistema de Análisis de Balances Ibéricos) database was used as an initial sampling frame. All companies were included in the Spanish National Classification of Economic Activities (CNAE-13, 14 and 15), and were classified according to the European Union classification as SMEs with fewer than 250 employees.

The survey was administered over a period of two months, from early January to the end February 2020. From a sample of 760 companies, a total of 208 managers responded to the survey. This resulted in a response rate of 27.36% with a factor of error of 5.79% for p=q=50% and a reliability level of 95.5%. Potential bias from non-response was addressed by comparing the early and late respondents in terms of green knowledge skills and organisational reputation. The independent sample t-test revealed no significant difference between the two groups (p= 0.848 and p= 0.522, respectively). Therefore, non-response bias was not considered to be a problem in this study (Armstrong and Overton, 1977).

To minimise data bias, we checked for common method bias through the Harman's single factor test (Podsakoff *et al.*, 2003; Podsakoff and Organ, 1986). Results of a post-hoc Harman's single-factor test showed that the unrotated factor solution of the one-factor model accounted for less than 50% of the variance (36.7%), indicating no substantial common method bias. This study has also used a confirmatory factor-analytic approach to the Harman one-factor test as a way of testing for the presence of bias (Podsakoff *et al.*, 2003). A worse fit for the one-factor model would suggest that common method variance does not pose a serious threat. The one-factor model yielded a Satorra-Bentler $\chi^2_{(120)}$= 627.33; χ^2/d.f=5.22 (compared with the measurement model, which yielded a Satorra-Bentler $\chi^2_{(120)}$= 183.43; χ^2/d.f=1.52). This means that the fit is

considerably worse for the one-dimensional model than for the measurement model, suggesting no substantial common method bias (Armstrong and Overton, 1977).

2.6.Measures

All constructs were self-reported and measured using a Likert scale of 7-points rating (1 "high disagreement" to 7 "high agreement" (see appendix for a list of items).

- Previous studies by (Pavlova, 2018a) provided guidance on developing items in terms of co-creation challenges (i.e. CCCh). Four items highlighted the presence of the main barriers to eco-innovation. The factors collected range from a lack of funds to a lack of technology.
- Active listening to customers (ALC) was assessed with a 3-item scale. Several measures of profitable listening have appeared in literature, and we adopted the idea of knowing first-hand from profitable customers their ideas (Gross, 1968). Following the recommendations from Wirtz et al. (2003), the second item was adapted as our measure for listening to everyone and not just those who are important from a revenue management orientation. The third item represents firms' capability to go beyond the stated wants and needs of potential customers and apply and operationalise suggestions into new routines and processes (Flores, 1993)
- Three items measured incremental eco-innovation (IEi) and assessed the extent to which companies were able to improve their green products, services or processes through minor modifications (Jansen *et al.*, 2006).
- Three items measured radical eco-innovation (REi) and assessed the extent to which companies were able to implement new green products, services or processes (Jansen *et al.*, 2006).
- Previous studies by (Pavlova, 2018) provided guidance on developing items in terms of green knowledge (i.e. GK). Four items highlighted the presence of the main competencies to eco-innovation. The factors collected range from awareness and willingness to skills to promote greener products and services.

2.7.Data analysis

We decided to use PLS-SEM as data analysis technique because all measures of our conceptual model were designed as composites (Richter *et al.*, 2016; Rigdon *et al.*, 2017). Following the classification of PLS-SEM purposes by Henseler, (2018) and Cepeda-Carrion, Cegarra-Navarro and Cillo, (2019), our PLS-SEM analysis is causal. This implies the hypothesis testing of a particular research model, maximising explained variance of our dependent variable and considering the fit indices in our model. in line with (Hair *et al.*, 2019), endogeneity is an issue to be tested. A two-step procedure has been established to assess a causal model with PLS-SEM (Hair *et al.*, 2019). These are: (1) assessment of the measurement model and (2) assessment of the structural model. We followed a bootstrap procedure to find the significance of indices (Chin, 1998). Bootstrapping is a resampling procedure that allows assessing the significance of fit indices, path coefficients, weights, and loadings of each composite indicators. We used SmartPLS 3.3.3 as a software package for our data analysis (Ringle *et al.*, 2005).

To detect potential problems of common method variance (CMV), we applied the procedural remedies proposed by (Podsakoff *et al.*, 2012) and (Podsakoff *et al.*, 2003) when data were collected. A statistical method was used to detect and control different sources of CMV,

namely, the measured latent marker variable (MLMV) approach (Chin *et al.*, 2013), which is a method suggested for handling CMV in PLS-SEM models. MLMV must not belong to the same domain of the variables included in the proposed model and must be taken from a different unit of analysis. The results show that the model with MLMV had worse fit indices, no significance of coefficients paths from MLMV and there are not significance differences between them. These additional tests reinforce our argument that our model is free of CMV issues. Finally, a full collinearity test based on variance inflation factors (VIFs) was carried out. According to (Kock and Lynn, 2012), when a VIF achieves a value greater than 3.3, there would be an indication of collinearity problems. This would warn if a model may be contaminated by CMV. The present model, with a maximum VIF of 3.00 may be considered free of CMV problems.

3. Results

3.1.Measurement model

Considering the causal (i.e. confirmatory) nature of the PLS-SEM analysis, the fit indices for the saturated model from our proposed model were calculated as a measure of confirmatory composite analyses (Henseler and Schuberth, 2020). As shown in Table 1, all fit indices for saturated model meets the requirements to confirm the proposed measurement model.

Following (Hair *et al.*, 2019), we assessed the measurement model. Results exhibit that it meets all the commonly designated measures of reliability and validity. First, individual reliability is sufficient because all standardised loadings are larger than 0.7 in all constructs (Hair *et al.*, 2019). Second, all measures of composite reliability are larger than 0.8. The values for average variance extracted (AVE) exceed the threshold of 0.5 for convergent validity (Table 1).

Table 1. Measurement Model

Construct	Indicator	Loadings	Composite reliability	Rho A [a]	AVE [b]
Co-creation challenges	CCCh1	0.808	0.870	0.827	0.626
	CCCh2	0.854			
	CCCh3	0.766			
	CCCh4	0.731			
Active listening to customers (ALC)	ALC1	0.859	0.866	0.767	0.684
	ALC2	0.842			
	ALC3	0.778			
Incremental eco-innovation	IEi1	0.894	0.912	0.855	0.776
	IEi2	0.897			
	IEi3	0.851			
Radical eco-innovation	REi1	0.904	0.907	0.852	0.765
	REi2	0.893			
	REi3	0.825			
Green knowledge	GK1	0.760	0.872	0.813	0.629
	GK2	0.792			
	GK3	0.789			
	GK4	0.830			

Notes:
[a] Dijkstra-Henseler's rho → (Rho A); [b] Average variance extracted→ (AVE)

Table 2 shows two methods to assess the discriminant validity of reflective constructs. According to both criteria – the (Fornell and Larcker, 1981) criterion and the heterotrait-

monotrait ratio of correlations – there is evidence of discriminant validity (Henseler *et al.*, 2015). Finally, all the constructs show discriminant validity since all HTMT indices are below 0.90 (Henseler *et al.*, 2015).

Table 2. Discriminant validity (Fornell and Larcker[a]'s and HTMT[b])

Construct	CCCh	ALC	IEi	REi	GK
CCCh	**0.791**	0.280	0.086	0.091	0.082
ALC	0.223	**0.827**	0.311	0.297	0.390
IEi	0.021	0.256	**0.881**	0.867	0.811
REi	-0.016	0.242	0.736	**0.875**	0.780
GK	0.037	0.315	0.677	0.652	**0.793**

Notes:
CCCh → Cco-creation challenges; ALC→ Active listening to customers; IEi → Incremental eco-innovation; REi → Radical eco-innovation; GK→ Green knowledge.
[a] Diagonal values (square root of AVE are in bold) should be higher than off-diagonal correlations shown below the diagonal line
[b] Heterotrait-Monotrait Ratio of Correlations (HTMT) thresholds are shown above the diagonal line.

3.2.Structural model

According to (Benitez *et al.*, 2020), we report the fit indices for our model at the beginning of the assessment of the structural model. The provided model has a good fit (Table 3). We also report the three fit indices suggested by (Henseler *et al.*, 2016) values and their confidence intervals (95% and 99%) for an exact test. Therefore, there is a good adjustment between the empirical data matrix and the theoretical model matrix. Table 3 exhibits the model fits and three parameters associated to it. The estimated model fit indices refer to the global model. This a requirement for confirmatory analysis with PLS-SEM (Henseler, 2018).

Table 3. Global goodness of fit, confirmatory composite analysis, and bootstrap-based 95% and 99% quantiles

	Estimated Model	Hi95	Hi99	Saturated Model	Hi95	Hi99
SRMR	0.077	**0.084**	**0.122**	0.074	0.065	**0.116**
d_{ULS}	0.899	**1.079**	**2.293**	0.838	0.637	**2.052**
d_G	0.311	**0.324**	**0.542**	0.309	**0.318**	**0.507**

Notes:
The figure in bold indicates the level of compliance with the index of adjustment.
SRMR: Standardised Root Mean Square Residual, d_{ULS}: Unweighted Least Squares Discrepancy, d_G: Geodesic Discrepancy

Following (Hair *et al.*, 2019), the next step of assessing the structural model is examining collinearity among the latent constructs. No VIF value is above the suggested threshold value of 3.0, so we found no collinearity issues. Next, we assessed the sign, magnitude, and significance of path coefficients which are the most important result of the structural model. Likewise, the aim of PLS-SEM algorithm maximises the explained variance of the dependent variables represented by determination coefficient (i.e., R^2). As (Hair *et al.*, 2019) argue, the use of bootstrapping (5,000 resamples) produces confident intervals to assess the statistical significance of the path coefficients. Thus, the consideration of bootstrap percentile confidence intervals provides greater assurance than merely relying on null hypothesis significance testing.

Table 4 provides a post-hoc indirect effect analysis for the effects of green knowledge on radical eco-innovation by way of incremental eco-innovation. Since both direct and indirect effects were found significant as the interval determined through bootstrapping does not contain the zero value, the results provided full support for hypotheses H1, H2 H3 and H4. Also, Table 4 reports the effect size f^2 which shows the change in R^2 if a specified construct is omitted from the model. A guideline of 0,02, 0,15, and 0,35 represent respectively, small, medium, and large effects (Cohen, 1977).

Table 4. Structural Model

		Confidence intervals				
Direct effects	Path coefficient	5% CI_{lo}	95% CI_{hi}	Significance (p-value)	Cohen's f-square	R^2
a_1=*CCCh→ALC*	0.227	0.132	0.372	0.002	0.054	0.051
a_2: *ALC→GK*	0.319	0.191	0.444	0.000	0.114	0.102
a_3: *GK→REi*	0,279	0.163	0.387	0.000	0.398	0.588
a_4: *GK→IEi*	0.667	0.606	0.739	0.000	0.848	0.459
a_5: *IEi→REi*	0.550	0.431	0.673	0.000	0.398	0.588
Indirect effects						
a_4 x a_5: *GK→IEi→REi*	0.367	0.277	0.469	0.000	0.398	0.588

Notes:
CCCh → Cco-creation challenges; ALC → Active listening to customers; IEi → Incremental eco-innovation; REi → Radical eco-innovation; GK→ Green knowledge.

4. Discussion and theoretical and managerial implications

This research has found a significant positive correlation between the challenges faced by organisations in the textile industry in their efforts to co-create value and active listening to customers.

This finding supports our hypothesis H1. While it may seem counter-intuitive at first, our findings suggest that when the business is perceived as lacking sustainability-related capabilities, its customers may become willing to share their knowledge and even acquire new environmental knowledge for it to be transferred to and adopted by the business. As outlined by Boadi et al., 2020, consumers find a way to transfer their environmental knowledge to the business via the workforce. Employees in particular become direct agents in the relationship between the business and its consumers, helping implement the company's value proposition and its eco-innovation strategy.

Our research has also found that active listening to customers has the potential to lead the business to the consumption and the effective integration of green knowledge and related capabilities provided by customers, which confirms hypothesis H2 of this research. This means that customers will not only engage in business when they see the value but also create a relationship with the business that leads to the sharing of their ethical perceptions and drive their intentions to co-create value, as discussed by Nadeem and Al-Imamy, (2020), customers will be willing to share their knowledge if they perceived their knowledge to integrate into products and services, for instance from a practical perspective, companies can share customer success stories.

Our research also found a direct positive relationship between green knowledge and both incremental and radical eco-innovation in organisations from the textile industry, which supports hypothesis H3. This highlights the importance of consumer contributions to

sustainable development strategies, which has been the focus of an increasing body of research in the last decade. In line with (Islam and Managi, 2019), we have found that businesses within the textile industry can implement eco-innovations if they engage their customers and other stakeholders in the development of new ways of thinking and value creation.

Our research found a positive relationship between incremental eco-innovation and radical eco-innovation in organisations in the textile industry, which supports hypothesis H4. This suggests that while incremental eco-innovations in products, services and processes lead to small improvements in the sustainability of the textile industry, such adjustments have a more significant role as the first stage in the overall process of eco-innovating. In other words, incremental eco-innovations pave the way for more radical changes and for the improved sustainability of the sector. In this vein, this study has gone one step further to argue that by integrating customers' green knowledge, businesses can implement both incremental and radical eco-innovation strategies that lead to a more sustainable response to the current environmental demands whilst improving efficiency, competitiveness and even expanding their customer base.

Regarding theoretical and managerial implications, this research has contributed to the domains of value co-creation, active listening to customers, green knowledge and incremental and radical innovations. From a theoretical perspective, this study analysed radical and incremental eco-innovation supported by value co-creation, active listening to customers and green knowledge. To the best of the authors' knowledge, this is the first study that combines consumer engagement and value co-creation, with an ultimate aim to improve the sustainability of the textile sector. Therefore, it opens new avenues for research in sectors that experience similar sustainability and ethical challenges to those faced by the fast fashion industry.

From a management perspective, a practical implication of the research is the need for SMEs to integrate customer-focused value co-creation strategies into their operations as much as –and often more than, large enterprises. This is due not only to the resource limitations inherent to the nature of SMEs, but also their need to embrace eco-innovation to address the growing sustainability challenges. Another practical implication is derived from the fact that customers are likely to be willing to share their knowledge if they perceive that it will be considered and integrated into products and services. From a practical perspective, this active listening could take the form of sharing customer success stories through the organisational channels to give a voice to the customers. Other practical implications stem from the fact that actively listening to customers and co-creating value with them is a driver of eco-innovations in the textile industry, which should prompt management action.

5. Conclusions

This paper contributes to the literature on environmental sustainability by informing SME eco-innovation through the engagement of their customers in value co-creation strategies. The research has significant theoretical and practical implications in the domains of co-creation, active listening to customers, green knowledge, and incremental and radical innovations. We found that when organisations from the sector lack eco-innovation capabilities their existing and often their potential customer base are able to acquire new environmental knowledge and transferred it to the business in the process of value co-creation. The research also found that such green knowledge has the potential to lead to eco-innovation in the sector. In other words, the value co-creation process between the textile industry and its customers is a driver of the

eco-innovations required to reduce the environmental impact of the sector, helping it address both its sustainability and its ethical challenges.

This research investigated the relationships between value co-creation challenges, active listening to customers, green knowledge and eco-innovation in the context of the textile industry, which is considered one of the most polluting sectors today. The research addresses the need for mechanisms to reduce the massive volumes of waste generated annually by the sector, mainly as a result of the fast fashion industry. This study has found that active listening to customers in the creation of value for the industry has the potential to contribute significantly to addressing the sustainability and ethical challenges facing the sector. The lack of funding, knowledge, qualified personnel and technology were recognized as existing barriers to eco-innovation, but the openness to external ideas and their potential adoption showed a clear opportunity for co-creation practices.

Knowledge of the natural environment and its conservation becomes a key to addressing these issues. We found that when organisations from the sector lack eco-innovation capabilities, their existing and often their potential customer base are able to acquire new environmental knowledge and transfer it to the business in the process of value co-creation. The research also found that such green knowledge has the potential to lead to radical and incremental eco-innovation in the sector. In other words, the value co-creation process between the textile industry and its customers is a driver for generating the eco-innovations required to reduce the environmental impact of the sector, helping address both its sustainability and its ethical challenges.

A limitation of this study is that it only analyses one sector and one country. However, this is an opportunity to reproduce this study in other industries and countries where business affects the environment negatively. Another limitation is that the items measuring active listening to customers do not necessarily reflect the degree to which customers are willing to provide green knowledge in particular. This becomes an opportunity to develop future research mechanisms to measure consumers' commitment to providing support, especially sharing high levels of green knowledge with organisations, as well as companies' commitment to actively listening to customers and to adopt their green knowledge.

References

Agrawal, A.K., Kaushik, A.K. and Rahman, Z. (2015), "Co-creation of Social Value through Integration of Stakeholders", *Procedia - Social and Behavioral Sciences*, Vol. 189, pp. 442–448.

Agrawal, A.K. and Rahman, Z. (2015), "Roles and Resource Contributions of Customers in Value Co-creation", *International Strategic Management Review*, Vol. 3 No. 1, pp. 144–160.

Aguilera-Caracuel, J. and Ortiz-de-Mandojana, N. (2013), "Green Innovation and Financial Performance: An Institutional Approach", *Http://Dx.Doi.Org/10.1177/1086026613507931*, SAGE PublicationsSage CA: Los Angeles, CA, Vol. 26 No. 4, pp. 365–385.

Ahmad, S., Islam, T., Sadiq, M. and Kaleem, A. (2021), "Promoting green behavior through Leadership ethical leadership : a model of green human resource management and environmental knowledge", *Leadership & OrganizationDevelopment Journal*, Vol. ahead-of-p No. ahead-of-print, available at:https://doi.org/10.1108/LODJ-01-2020-0024.

Amin, M., Shamim, A., Ghazali, Z. and Khan, I. (2021), "Employee Motivation to Co-Create Value (EMCCV): Construction and Validation of Scale", *Journal of Retailing and Consumer Services*, Elsevier Ltd, Vol. 58, available at:https://doi.org/10.1016/J.JRETCONSER.2020.102334.

Armstrong, J.S. and Overton, T.S. (1977), "Estimating Nonresponse Bias in Mail Surveys", *Journal of Marketing Research*, Vol. 14 No. 3, p. 396.

Azzone, G. and Noci, G. (1998), "Seeing ecology and 'green' innovations as a source of change", *Journal of Organizational Change Management*, Emerald, Vol. 11 No. 2, pp. 94–111.

Barber, N., Taylor, D.C. and Strick, S. (2009), "Environmental Knowledge and Attitudes : Influencing the Purchase Decisions of Wine Consumers", *CHRIE Conference-Refereed Track*.

Benitez, J., Henseler, J., Castillo, A. and Schuberth, F. (2020), "How to perform and report an impactful analysis using partial least squares: Guidelines for confirmatory and explanatory IS research", *Information and Management*, Vol. 57 No. 2, p. 103168.

Berry, L.L. and Parasuraman, A. (1997), "Listening to the Customer — The Concept of a Service-Quality Information System", *MIT Sloan Management Review*, available at: (accessed 12 July 2022).

Bly, S., Gwozdz, W. and Reisch, L.A. (2015), "Exit from the high street: an exploratory study of sustainable fashion consumption pioneers", *International Journal of Consumer Studies*, John Wiley & Sons, Ltd, Vol. 39 No. 2, pp. 125–135.

Boadi, E.A., He, Z., Boadi, E.K., Antwi, S. and Say, J. (2020), "Customer value co-creation and employee silence: Emotional intelligence as explanatory mechanism", *International Journal of Hospitality Management*, Vol. 91, available at:https://doi.org/10.1016/j.ijhm.2020.102646.

Bossle, M.B., Dutra De Barcellos, M., Vieira, L.M. and Sauvée, L. (2016), "The drivers for adoption of eco-innovation", *Journal of Cleaner Production*.

Boukis, A. and Kabadayi, S. (2020), "A classification of resources for employee-based value creation and a future research agenda", *European Management Journal*, Pergamon, Vol. 38 No. 6, pp. 863–873.

Brewer, M.K. (2019), "Slow Fashion in a Fast Fashion World: Promoting Sustainability and Responsibility", *Laws*, Vol. 8 No. 4, available at:https://doi.org/10.3390/laws8040024.

Buzzo, A. and Abreu, M.J. (2019), "Fast Fashion, Fashion Brands & Sustainable Consumption", in Muthu, S.S. (Ed.), *Fast Fashion, Fashion Brands and Sustainable Consumption*, Springer Singapore, Singapore, pp. 1–17.

Carrillo, J., del Río, P. and Könnölä, T. (2011), *Eco-Innovación. Claves Para La Competitividad Sostenible y La Sostenibilidad Competitiva*.

Caspersz, D. and Stasinska, A. (2015), "Can we teach effective listening? An exploratory study", *Journal of University Teaching and Learning Practice*, Vol. 12 No. 4, pp. 10–23.

Cegarra Navarro, J.G., Cepeda-Carrión, G., Wensley, A. and Sánchez-Casado, N. (2013), "An application of health-portals to improve electronic listening", *Service Industries Journal*, Vol. 33 No. 13–14, available at:https://doi.org/10.1080/02642069.2013.815730.

Cegarra-Navarro, J.G. and Cepeda-Carrión, G. (2008), "Why Open-mindedness Needs Time to Explore and Exploit Knowledge", *Time & Society*, Vol. 17 No. 3, available at:https://doi.org/10.1177/0961463X08093422.

Cegarra-Navarro, J.-G., Jiménez-Jiménez, D., García-Pérez, A. and Del Giudice, M. (2018), "Building affective commitment in a financial institution through an ambidexterity context", *European Business Review*, Vol. 30 No. 1, pp. 2–25.

Cegarra-Navarro, J.G. and Sánchez-Polo, M.T. (2009), "Implementing e-business through eListening in the Spanish information technology industry", *The Service Industries Journal*, Routledge, Vol. 29 No. 8, pp. 1135–1149.

Cegarra-Navarro, J.-G., Wensley, A.K.P., Martínez-Martínez, A. and García-Pérez, A. (2020), "Linking organisational commitment with continuous learning though peripheral vision and procedural memory", *European Management Journal*, Vol. 38 No. 6, pp. 874–883.

Cepeda-Carrion, G., Cegarra-Navarro, J.G. and Cillo, V. (2019), "Tips to use partial least squares structural equation modelling (PLS-SEM) in knowledge management", *Journal of Knowledge Management*.

Chan, E.S.W., Hon, A.H.Y., Chan, W. and Okumus, F. (2014), "What drives employees' intentions to implement green practices in hotels? The role of knowledge, awareness, concern and ecological behaviour", *International Journal of Hospitality Management*, Vol. 40, pp. 20–28.

Chen, J. and Liu, L. (2020), "Customer participation, and green product innovation in SMEs: The mediating role of opportunity recognition and exploitation", *Journal of Business Research*, Vol. 119, pp. 151–162.

Chin, W.W. (1998), “The partial least squares approach for structural equation modeling”, in Mahwah, N.J.L.E.A. (Ed.), *Modern Methods for Business Research*, Marcoulide., pp. 295–336.

Chin, W.W., Thatcher, J.B., Wright, R.T. and Steel, D. (2013), “Controlling for Common Method Variance in PLS Analysis: The Measured Latent Marker Variable Approach”, in Abdi, H., Chin, W.W., Esposito Vinzi, V., Russolillo, G. and Trinchera, L. (Eds.), *Springer Proceedings in Mathematics and Statistics*, Vol. 56, Springer New York, New York, NY, pp. 231–239.

Clark, T. (1999), “Sharing the Importance of Attentive Listening Skills”, *Journal of Management Education*, SAGE Publications Inc, Vol. 23 No. 2, pp. 216–223.

Cohen, J. (1977), “F Tests on Means in the Analysis of Variance and Covariance”, in Cohen, J.B.T.-S.P.A. for the B.S. (Ed.), *Statistical Power Analysis for the Behavioral Sciences*, Academic Press, pp. 273–406.

Davison, R.M. and Martinsons, M.G. (2016), “Context is king! Considering particularism in research design and reporting”, *Journal of Information Technology*, Vol. 31 No. 3, pp. 241–249.

Day, G.S. and Schoemaker, P. (2004), “Peripheral vision: Sensing and acting on weak signals”, *Long Range Planning*, Vol. 37 No. 2, pp. 117–121.

Daystar, J., Chapman, L., Moore, M., Pires, S. and Golden, J. (2019), “Quantifying apparel consumer use behavior in six countries: Addressing a data need in life cycle assessment modeling”, *Journal of Textile and Apparel, Technology and Management*, Vol. 11 No. 1.

Dearing, A. (2000), *Sustainable Innovation: Drivers and Barriers*, *World Business Council for Sustainable Development - WBCS*.

Dewar, R.D. and Dutton, J.E. (1986a), “The Adoption of Radical and Incremental Innovations: An Empirical Analysis”, *Management Science*, Vol. 32 No. 11, pp. 1422–1433.

Dewar, R.D. and Dutton, J.E. (1986b), “The Adoption of Radical and Incremental Innovations: An Empirical Analysis”, *Management Science*, Vol. 32 No. 11, pp. 1422–1433.

Durst, S. and Edvardsson, I.R. (2012), “Knowledge management in SMEs: A literature review”, *Journal of Knowledge Management*, Emerald Group Publishing Limited, Vol. 16 No. 6, pp. 879–903.

Eikebrokk, T.R., Garmann-Johnsen, N.F. and Olsen, D.H. (2021), “Co-creation in networks of SMEs: a conceptual model of the co-creation process”, *Procedia Computer Science*, Vol. 181, pp. 360–366.

Flores, F. (1993), “Innovation by listening carefully to customers”, *Long Range Planning*, Pergamon, Vol. 26 No. 3, pp. 95–102.

Fornell, C. and Larcker, D.F. (1981), “Evaluating Structural Equation Models with Unobservable Variables and Measurement Error”, *Journal of Marketing Research*, American Marketing Association, Vol. 18 No. 1, pp. 39–50.

Fussler, C. and James, P. (1997), “Driving Eco-Innovation; A Breakthrough Dicipline for Innovation and Sustainability”, *Business Strategy and The Environment*, Vol. 6, pp. 296–299.

Galvagno, M. and Dalli, D. (2014), “Theory of value co-creation: A systematic literature review”, *Managing Service Quality*, Emerald Group Holdings Ltd., Vol. 24 No. 6, pp. 643–683.

Gangi, F., Meles, A., Monferrà, S. and Mustilli, M. (2020), “Does corporate social responsibility help the survivorship of SMEs and large firms?”, *Global Finance Journal*, Vol. 43, p. 100402.

Garver, M.S. (2001), “Listening to Customers”, *American Journal of Business*, Emerald, Vol. 16 No. 2, pp. 41–54.

Ghassim, B. and Bogers, M. (2019), “Linking stakeholder engagement to profitability through sustainability-oriented innovation: A quantitative study of the minerals industry”, *Journal of Cleaner Production*, Vol. 224, pp. 905–919.

Ghisetti, C., Mancinelli, S., Mazzanti, M. and Zoli, M. (2017), “Financial barriers and environmental innovations: evidence from EU manufacturing firms”, *Climate Policy*, Taylor & Francis, Vol. 17 No. sup1, pp. S131–S147.

Glynn, W.J., de Búrca, S., Brannick, T., Fynes, B. and Ennis, S. (2003), “Listening practices and performance in service organisations”, *International Journal of Service Industry Management*, MCB UP Ltd, Vol. 14 No. 3, pp. 310–330.

Gross, W. (1968), “Profitable listening for manufacturers and dealers: How to use a communication system”, *Business Horizons*, Vol. 11 No. 6, pp. 35–44.

Guzmán, F., Paswan, A.K. and Kennedy, E. (2019), “Consumer Brand Value Co-creation Typology”, *Journal of Creating Value*, Vol. 5 No. 1, pp. 40–52.

Hair, J.F., Sarstedt, M. and Ringle, C.M. (2019), “Rethinking some of the rethinking of partial least squares”, *European Journal of Marketing*, Emerald Publishing Limited, Vol. 53 No. 4, pp. 566–584.

Hazarika, N. and Zhang, X. (2019), “Evolving theories of eco-innovation: A systematic review”, *Sustainable Production and Consumption*, Elsevier, Vol. 19, pp. 64–78.

Henseler, J. (2018), “Partial least squares path modeling: Quo vadis?”, *Quality and Quantity*, Vol. 52 No. 1, pp. 1–8.

Henseler, J., Hubona, G. and Ray, P.A. (2016), “Using PLS path modeling in new technology research: Updated guidelines”, *Industrial Management & Data Systems*, Vol. 116 No. 1, pp. 2–20.

Henseler, J., Ringle, C.M. and Sarstedt, M. (2015), “A new criterion for assessing discriminant validity in variance-based structural equation modeling”, *Journal of the Academy of Marketing Science*, Vol. 43 No. 1, pp. 115–135.

Henseler, J. and Schuberth, F. (2020), “Using confirmatory composite analysis to assess emergent variables in business research”, *Journal of Business Research*, Vol. 120, pp. 147–156.

Hewett, R. and Shantz, A. (2021), “A theory of HR co-creation”, *Human Resource Management Review*, JAI, Vol. 31 No. 4, p. 100823.

Horbach, J., Belin, J. and Olta, V. (2013), “Determinants of Eco-innovation from a European-wide Perspective - an Analysis based on the Community Innovation Survey (CIS)”, *Industry and Innovation*, SEEDS, Sustainability Environmental Economics and Dynamics Studies, Vol. 20 No. 6, pp. 523–543.

Horng, J.S., Liu, C.H., Chou, S.F., Tsai, C.Y. and Chung, Y.C. (2017), “From innovation to sustainability: Sustainability innovations of eco-friendly hotels in Taiwan”, *International Journal of Hospitality Management*, Elsevier Ltd, Vol. 63, pp. 44–52.

Islam, M. and Managi, S. (2019a), “Green growth and pro-environmental behavior: Sustainable resource management using natural capital accounting in India”, *Resources, Conservation and Recycling*, Elsevier, Vol. 145, pp. 126–138.

Islam, M. and Managi, S. (2019b), “Green growth and pro-environmental behavior: Sustainable resource management using natural capital accounting in India”, *Resources, Conservation and Recycling*, Elsevier, Vol. 145, pp. 126–138.

Islam, Md.S., Ahmed, S. and Azady, Md.A.R. (2021), “Sustainable technologies for textile production”, *Fundamentals of Natural Fibres and Textiles*, available at:https://doi.org/10.1016/b978-0-12-821483-1.00017-6.

Jacobs, C. and Coghlan, D. (2005), “Sound from silence: On listening in organizational learning”, *Human Relations*, SAGE Publications Ltd, Vol. 58 No. 1, pp. 115–138.

Jamison, A. (2001a), *The Making of Green Knowledge*, *The Making of Green Knowledge*, Cambridge University Press, available at:https://doi.org/10.1017/cbo9780511489143.

Jamison, A. (2001b), *The Making of Green Knowledge*, *The Making of Green Knowledge*, Cambridge University Press, available at:https://doi.org/10.1017/cbo9780511489143.

Jamison, A. (2001c), *The Making of Green Knowledge*, *The Making of Green Knowledge*, Cambridge University Press, available at:https://doi.org/10.1017/cbo9780511489143.

Jansen, J.J.P., Van Den Bosch, F.A.J. and Volberda, H.W. (2006), “Exploratory innovation, exploitative innovation, and performance: Effects of organizational antecedents and environmental moderators”, *Management Science*, Vol. 52 No. 11, pp. 1661–1674.

Jonsdottir, I.J. and Fridriksdottir, K. (2020), “ACTIVE LISTENING: IS IT THE FORGOTTEN DIMENSION IN MANAGERIAL COMMUNICATION?”, *International Journal of Listening*, Routledge, Vol. 34 No. 3, pp. 178–188.

Joshi, Y. and Rahman, Z. (2015), “Factors Affecting Green Purchase Behaviour and Future Research Directions”, *International Strategic Management Review*, No longer published by Elsevier, Vol. 3 No. 1–2, pp. 128–143.

Klewitz, J. and Hansen, E.G. (2014), "Sustainability-oriented innovation of SMEs: A systematic review", *Journal of Cleaner Production*.

Kmieciak, R. (2019), "Improving SME performance through organizational memory: The role of open-mindedness culture", *Journal of Organizational Change Management*, Emerald Group Holdings Ltd., Vol. 32 No. 4, pp. 473–491.

Kock, N. and Lynn, G.S. (2012), "Lateral collinearity and misleading results in variance-based SEM: An illustration and recommendations", *Journal of the Association for Information Systems*, Vol. 13 No. 7, pp. 546–580.

Könnölä, T. and Unruh, G.C. (2007), "Really changing the course: the limitations of environmental management systems for innovation", *Business Strategy and the Environment*, John Wiley & Sons, Ltd, Vol. 16 No. 8, pp. 525–537.

von Krogh, G., Ichijo, K. and Nonaka, I. (2000), *Enabling Knowledge Creation: How to Unlock the Mystery of Tacit Knowledge* , Oxford. University Press, available at: (accessed 15 July 2022).

Kumar, J., Singha, K., Pandit, P., Maity, S. and Ray, A. (2020), "Challenges for Waste in Fashion and Textile Industry", *Recycling from Waste in Fashion and Textiles*, John Wiley & Sons, Ltd, pp. 19–32.

Li, C., Lin, C. and Chu, C. (2008), "The nature of market orientation and the ambidexterity of innovations", *Management Decision*, Emerald Group Publishing Limited, Vol. 46 No. 7, pp. 1002–1026.

Martínez-Martínez, A., Cegarra-Navarro, J.G. and Bolisani, E. (2021), "Resolving internal environmental barriers with KM practices", *Knowledge Management Research \& Practice*, Taylor & Francis, Vol. 0 No. 0, pp. 1–14.

Martínez-Martínez, A., Cegarra-Navarro, J.G. and Garcia-Perez, A. (2022), "Sustainability knowledge management and organisational learning in tourism: current approaches and areas for future development", *Journal of Sustainable Tourism*, Routledge, available at:https://doi.org/10.1080/09669582.2022.2086560.

Min, K.S., Jung, J.M. and Ryu, K. (2021), "Listen to their heart: Why does active listening enhance customer satisfaction after a service failure?", *International Journal of Hospitality Management*, Elsevier Ltd, Vol. 96, p. 102956.

Mont, O., Neuvonen, A. and Lähteenoja, S. (2014a), "Sustainable lifestyles 2050: stakeholder visions, emerging practices and future research", *Journal of Cleaner Production*, Elsevier, Vol. 63, pp. 24–32.

Mont, O., Neuvonen, A. and Lähteenoja, S. (2014b), "Sustainable lifestyles 2050: Stakeholder visions, emerging practices and future research", *Journal of Cleaner Production*, Vol. 63, available at:https://doi.org/10.1016/j.jclepro.2013.09.007.

Nadeem, W. and Al-Imamy, S. (2020), "Do ethics drive value co-creation on digital sharing economy platforms?", *Journal of Retailing and Consumer Services*, Vol. 55, available at:https://doi.org/10.1016/j.jretconser.2020.102095.

Oertzen, A.S., Odekerken-Schröder, G., Brax, S.A. and Mager, B. (2018), "Co-creating services—conceptual clarification, forms and outcomes", *Journal of Service Management*, Emerald Publishing Limited, Vol. 29 No. 4, pp. 641–679.

Partzsch, L., Zander, M. and Robinson, H. (2019), "Cotton certification in Sub-Saharan Africa: Promotion of environmental sustainability or greenwashing?", *Global Environmental Change*, Vol. 57, p. 101924.

Pavlova, M. (2018a), "Fostering inclusive, sustainable economic growth and 'green' skills development in learning cities through partnerships", *International Review of Education*, Vol. 64, pp. 339–354.

Pavlova, M. (2018b), "Fostering inclusive, sustainable economic growth and 'green' skills development in learning cities through partnerships", *International Review of Education*, No. February, pp. 1–16.

Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y. and Podsakoff, N.P. (2003), "Common method biases in behavioral research: a critical review of the literature and recommended remedies.", *Journal of Applied Psychology*, Vol. 88 No. 5, pp. 879–903.

Podsakoff, P.M., MacKenzie, S.B. and Podsakoff, N.P. (2012), "Sources of Method Bias in Social Science Research and Recommendations on How to Control It", *Annual Review of Psychology*, available at:https://doi.org/10.1146/annurev-psych-120710-100452.

Podsakoff, P.M. and Organ, D.W. (1986), "Self-Reports in Organizational Research: Problems and Prospects", *Journal of Management*, Vol. 12 No. 4, pp. 531–544.

Prahalad, C.K. and Ramaswamy, V. (2004), "Co-creation experiences: The next practice in value creation", *Journal of Interactive Marketing*, Vol. 18 No. 3, pp. 5–14.

Qu, G., Li, X., Hu, L. and Jiang, G. (2020), "An Imperative Need for Research on the Role of Environmental Factors in Transmission of Novel Coronavirus (COVID-19)", *Environmental Science & Technology*, American Chemical Society, Vol. 54 No. 7, pp. 3730–3732.

Ranjan, K.R. and Read, S. (2014), "Value co-creation: concept and measurement", *Journal of the Academy of Marketing Science 2014 44:3*, Springer, Vol. 44 No. 3, pp. 290–315.

Reijseger, G., Peeters, M.C.W., Taris, T.W. and Schaufeli, W.B. (2017), "From Motivation to Activation: Why Engaged Workers are Better Performers", *Journal of Business and Psychology*, Springer New York LLC, Vol. 32 No. 2, pp. 117–130.

Renwick, D.W.S., Redman, T. and Maguire, S. (2013), "Green Human Resource Management: A Review and Research Agenda", *International Journal of Management Reviews*, John Wiley & Sons, Ltd, Vol. 15 No. 1, pp. 1–14.

Richter, N.F., Cepeda, G., Roldán, J.L. and Ringle, C.M. (2016), "European management research using partial least squares structural equation modeling (PLS-SEM)", *European Management Journal*, Vol. 34 No. 6, pp. 589–597.

Rigdon, E.E., Sarstedt, M. and Ringle, C.M. (2017), "On Comparing Results from CB-SEM and PLS-SEM: Five Perspectives and Five Recommendations", *Marketing ZFP*, Vol. 39 No. 3, pp. 4–16.

Ringle, C.M., Wende, S. and Will, A. (2005), "SmartPLS 2.0", *Hamburg: University of Hamburg*.

Roser, T., DeFillippi, R. and Cooke, J.G. (2014), "Co-creation in design: How the UK company Own Label combines openness and ownership to manage talent", *Strategy and Leadership*, Emerald Group Holdings Ltd., Vol. 42 No. 5, pp. 34–40.

Rutter, K.A. (2003), "From Measuring Clouds to Active Listening", *Management Learning*, SAGE Publications Ltd, Vol. 34 No. 4, pp. 465–480.

Samant, S.M. and Sangle, S. (2016), "A selected literature review on the changing role of stakeholders as value creators", *World Journal of Science, Technology and Sustainable Development*, Emerald Group Publishing Limited, Vol. 13 No. 2, pp. 100–119.

Scuotto, V., del Giudice, M., Bresciani, S. and Meissner, D. (2017), "Knowledge-driven preferences in informal inbound open innovation modes. An explorative view on small to medium enterprises", *Journal of Knowledge Management*, Emerald Group Publishing Ltd., Vol. 21 No. 3, pp. 640–655.

Shao, J. and Ünal, E. (2019), "What do consumers value more in green purchasing? Assessing the sustainability practices from demand side of business", *Journal of Cleaner Production*, Vol. 209, pp. 1473–1483.

Sheng, M.L. and Chien, I. (2016), "Rethinking organizational learning orientation on radical and incremental innovation in high-tech firms", *Journal of Business Research*, Elsevier Inc., Vol. 69 No. 6, pp. 2302–2308.

Shulga, L. v. and Busser, J.A. (2020), "Hospitality employee and customer role in value co-creation: Personal, organizational and collaborative outcomes", *International Journal of Hospitality Management*, Pergamon, Vol. 91, p. 102648.

Singh, S.K., Giudice, M. del, Chierici, R. and Graziano, D. (2020), "Green innovation and environmental performance: The role of green transformational leadership and green human resource management", *Technological Forecasting and Social Change*, North-Holland, Vol. 150, p. 119762.

Souto, J.E. and Rodriguez, A. (2015), "The problems of environmentally involved firms: innovation obstacles and essential issues in the achievement of environmental innovation", *Journal of Cleaner Production*, Elsevier, Vol. 101, pp. 49–58.

Subramaniam, M. and Youndt, M.A. (2005), "The Influence of Intellectual Capital on the Types of Innovative Capabilities", *Academy of Management Journal*, Vol. 48 No. 3, pp. 450–463.

Tee, M., Abdullah, R., Din, J., Abdullah, S. and Wu, L. (2017), "Green SD adoption using knowledge mangement facilitation – A motivational perspective", *Journal of Theoretical and Applied Information Technology*, Vol. 95 No. 17, pp. 4291–4303.

Tian, J., Vanderstraeten, J., Matthyssens, P. and Shen, L. (2021), "Developing and leveraging platforms in a traditional industry: An orchestration and co-creation perspective", *Industrial Marketing Management*, Vol. 92, pp. 14–33.

Triguero, A., Moreno-Mondéjar, L. and Davia, M.A. (2013), "Drivers of different types of eco-innovation in European SMEs", *Ecological Economics*, Vol. 92, pp. 25–33.

UNCCD. (2019), "UN launches drive to highlight environmental cost of staying fashionable", *UN Conference on Trade and Development (UNCTAD)*.

Vorbach, S., Müller, C. and Poandl, E. (2019), "Co-creation of Value Proposition: Stakeholders Co-creating Value Propositions of Goods and Services", in Redlich, T., Moritz, M. and Wulfsberg, J.P. (Eds.), *Co-Creation: Reshaping Business and Society in the Era of Bottom-up Economics*, Springer International Publishing, Cham, pp. 51–62.

Waidenfels, B. (1995), "The other and the foreign", *Philosophy & Social Criticism*, SAGE Publications Ltd, Vol. 21 No. 5–6, pp. 111–124.

Welsch, W. (1997), *Undoing Aesthetics*, Sage Publications, London ; Thousand Oaks Calif., available at: (accessed 12 July 2022).

Whyte, K.P. (2013), "On the role of traditional ecological knowledge as a collaborative concept: a philosophical study", *Ecological Processes*, Vol. 2 No. 7, pp. 1–12.

Wijaya, S.G.T. and Paramita, E.L. (2021), "Purchase intention toward sustainable fashion brand: analysis on the effect of customer awareness on sustainability on willingness to pay", *Diponegoro International Journal of Business*, Department of Management | Faculty of Economics and Business | Universitas Diponegoro, Vol. 4 No. 1, pp. 49–57.

Wirtz, J., Kimes, S.E., Theng, J.H.P. and Patterson, P. (2003), "Revenue management: Resolving potential customer conflicts", *Journal of Revenue and Pricing Management*, Vol. 2 No. 3, pp. 216–226.

Zhang, S. and Meng, Q. (2021), "Electronics closed-loop supply chain value co-creation considering cross-shareholding", *Journal of Cleaner Production*, Vol. 278, available at:https://doi.org/10.1016/j.jclepro.2020.123878.

Zhang, Y., Li, X. and Xing, C. (2022), "How does China's green credit policy affect the green innovation of high polluting enterprises? The perspective of radical and incremental innovations", *Journal of Cleaner Production*, Elsevier, Vol. 336, p. 130387.

Appendix 1: Questionnaire items

Co-creation challenges: Please indicate the degree of agreement or disagreement with respect to which are barriers to eco-innovation (1 = Totally disagree and 7 totally agree);
CCCh1. Lack of funding. CCCh2. Lack of knowledge. CCCh5. Lack of qualified personnel. CCCh6. Lack of technology. *Source: Adapted from* (Pavlova, 2018b)
Active listening to customers: Please indicate the degree of agreement or disagreement with respect to which are barriers to eco-innovation (1 = Totally disagree and 7 totally agree);
ALC1. In the company we are open to new ideas from profitable customers. ALC2. In our company we are open to new ideas from potential clients. ALC3. Suggestions from potential customers are adopted in the company in the form of new routines and processes. *Source: Adapted from* (Cegarra-Navarro *et al.*, 2018)
Incremental eco-innovation: Please indicate the degree of agreement or disagreement with respect to which are barriers to eco-innovation (1 = Totally disagree and 7 totally agree);
IEi1. The company frequently improves its green products, services or processes through minor modifications. IEi2. The company makes improvements to its current green products, services or processes for its local market. IEi3. For the company, reducing the costs of internal processes associated with ecological products or services is an important objective. *Source: Adapted from* (Jansen *et al.*, 2006)
Radical eco-innovation: Please indicate the degree of agreement or disagreement with respect to which are barriers to eco-innovation (1 = Totally disagree and 7 totally agree);
REi1. The company experiments with new green products, services or processes in our market. REi2. The company markets green products or services that are completely new to our unit. REi3. Regularly use new distribution channels for your green products or services. *Source: Adapted from* (Jansen *et al.*, 2006)
Green knowledge: Please indicate the degree of agreement or disagreement with respect to the following competencies (1 = Totally disagree and 7 totally agree);
GK1. Environmental awareness and willingness to learn about sustainable development. GK2. Skills on risk analysis. GK3. Communication and negotiation skills to deal with conflicts of interest in complex contexts. GK4. Marketing skills to promote greener products and services. *Source: Adapted from* (Pavlova, 2018a)