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Do green practices really attract customers? The sharing economy from the sustainable supply chain management perspective

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***Highlights**

- Investment Recovery (the economic related sustainable supply chain practices) of sharing economy platforms has the most significant impact on customers' intention of using the products/services of sharing economy platforms.
- Corporate Social Responsibility (the social related sustainable supply chain practices) of sharing economy platforms can also influence customers' intention of using the products/services of sharing economy platforms.
- The green related sustainable supply chain practices of sharing economy platforms (i.e. eco-design, internal green management, supplier green management, customer green management) cannot motivate customers to use sharing economy platforms.
- Promote green related sustainable supply chain practices through better-designed advertisements could boost sharing economy platforms' contribution to sustainable development and attract more customers.

Do green practices really attract customers? The sharing economy from the sustainable supply chain management perspective

Abstract

The notion of the sharing economy has been introduced in many sectors and provided significant benefits to consumers and asset owners. Despite the remarkable improvement of the sharing economy in recent years, its relationship with sustainability remains insufficiently researched. This study adopts a sustainable supply chain management (SSCM) perspective. A large-scale survey with 420 participants showed that investment recovery (IR) practices and corporate social responsibility (CSR) conducted by sharing economy platforms significantly and positively affect customers' intention to use sharing economy-based services/products, whereas internal green management (IGM), supplier green management (SGM), eco-design (ECD) and customer green management (CGM) practices do not. A follow-up qualitative study with ten participants provided further explanations and supported the findings of the survey. This study links the sharing economy and sustainability by testing the effectiveness of sharing economy platforms' sustainable practices and proposes the best practices for sharing economy platforms to maintain a long-term sustainable marketplace.

Key words: sharing economy, sustainable supply chain management, customer intention, mixed methods research

1. Introduction

The collaborative consumption or the sharing economy is based on peer-to-peer actions through '*borrowing, renting, gifting, swapping and buying*' in order to gain the services or products (Roos & Hahn, 2017, p.113; Hamari et al., 2016). Compared to the linear and individual consumptions, the sharing economy brings the consumption behaviour to a virtual circle, for instance, decrease over-consumption rate and environmental pollution issues (Lyons et al. 2018), and help the poverty by reducing the cost of transactions (Heinrichs, 2013; Scavarda et al. 2019).

The sharing economy has grown significantly since 2010 with the rapid development of major players such as Uber (automobile sector), Airbnb (hospitality sector), Spotify (entertainment sector), LendingClub (finance sector) and Thredup (retail sector) through disintermediation, excess capacity utilisation, and productivity improvement (PwC, 2015). Unlike traditional businesses, sharing economy-based companies do not virtually purchase any inputs, produce products, and sell physical products. Instead, they invite participants and match different groups of participants to access the other groups of participants. Most of the existing sharing economy service providers offer something that traditional businesses offer to keep their participants in line. However, these sharing economy service platforms are being erected on top of platforms that are already being erected on top of platforms. For instance, Google Android is an open source operational platform for application developers, handset makers, and users. Uber's platform for matching drivers and travellers is built on top of Android, and Uber Eats is building a platform on top of Uber which matches restaurants, drivers and consumers who want a quick home delivery meal. This has made sharing economy- based companies more flexible and enabled them to provide more convenient services to consumers compared to traditional businesses. The impact of the sharing economy is it makes services more affordable for wider populations. Utilising a mobile application enables sharing economy-based services to be more approachable and pervasive. The boundary between providers and customers is blurring and collapsing as the sharing economy enables everyone to play both characters.

Nevertheless, despite the remarkable growth of the sharing economy in these years, many of its fields still remain insufficiently researched, particularly its relationship to sustainability. Some scholars (e.g. Roos & Hahn, 2017) proposed the sharing economy is the path to sustainability enabling a mind shift of customers. However, others argued that there is a lack of community and environmental concern in the sharing economy which predominantly promotes capitalism (Martin, 2016). Moreover, regulators and governments have questioned the long-term effect of sharing economy-based business models on communities and incumbents (Marchi & Parekh, 2015).

Furthermore, the existing operational studies (e.g. Hamari et al., 2016; Lee, 2018; Liu & Mattila, 2017; Milanova & Maas, 2017; Oyedele & Simpson, 2018; Zhang et al., 2018) focused predominantly on the economic pillars (e.g. price advantage) of collaborative consumption services and proposed the utilisation of the economic benefits to motivate

consumers' service adoption. This trend has led to the result that in practice, although having embedded the notion of environment and society pillars in their business targets, most of the sharing economy-based businesses have not gained a greater understanding of the impacts of environment and society pillars on consumers' perceptions of the sharing economy.

A limited number of consumer and sharing economy studies have started to investigate and involved the society and environment pillars of sustainability in their research models; however, due to the incomplete concept of sustainability, these studies generated narrow findings. For instance, Hamari et al. (2016) defined sustainability as green management and only used environmental benefits as representatives for sustainability in their study. Their proposed green-related measures are not able to represent all the pillars of sustainability, as sustainability should not only include environment protection and energy saving, as ECD, SGM, IGM, and CGM are also crucial perspectives should be considered to achieve business sustainability (Zhang et al., 2018b; Zhu et al., 2008). Furthermore, these studies adopted reputation and enjoyment to represent the society pillar of sustainability, which should be more widely conceptualised as the contribution of sharing economy platforms to the local community (Seuring & Müller, 2008; Zhu et al., 2008). Moreover, the lack of research from operational perspectives means that it is unclear what the effectiveness and impacts of SSCM practices conducted by sharing economy-based platforms on their customers are, and how the practices would actually help the company to maintain a sustainable market position.

To fill the literature gaps identified above, the present study aims to examine the relationship between SSCM practices applied by sharing economy platforms and customers' intention to adopt sharing economy services/products by answering the following research questions: 1) why are customers attracted by these SSCM practices? and 2) what are the impacts of SSCM practices conducted by sharing platforms on customers' intention to adopt sharing economy based services? A more comprehensive sustainable practice model that includes refined sustainable measurements (i.e. economy, society, and environment pillars) and the relations with consumers' sharing economy adoption intention will be proposed to address the research questions.

A large-scale survey was employed to investigate the impact of SSCM practices on customers' intention to use sharing economy services/products. A follow-up qualitative study (interviews) was conducted to discuss the root causes behind the findings of the survey. This research contributes to the literature from two perspectives. First, it not only links the sharing economy and sustainability by testing the sustainable practices of sharing economy platforms, but also clarifies the relationship between the sharing economy and business sustainability from an SSCM perspective. Second, this study identifies the gap in promoting sustainability to sharing economy adopters (customers and providers) and proposes the best practices of conducting sustainable practices for sharing economy platforms.

This paper is structured as follows. The second section reviews the relevant literature. Section three demonstrates the hypotheses development. Section four proposes and introduces the theoretical model and methodology. Section five analyses the collected

quantitative and qualitative data to generate the findings. Section six discusses the findings in detail to clarify the impact of sustainable practices on customers' intention to use sharing economy-based services/products. Section seven concludes the study and proposes the direction for future studies.

2. Literature review

2.1. The emergence of the sharing economy has altered customers' preference

The term 'sharing economy' starts with 'sharing' and implies an alternative ownership and usage of products and services (Belk, 2007). The 'sharing economy' concept was coined by Lawrence Lessig in 2008. It is differentiated from the traditional concept of sharing, as the sharing economy is facilitated by digital communication technologies where people are allowed to trade with anyone at any time around the world (Belk, 2014).

The sharing economy concept has been introduced in many sectors and offered significant benefits to consumers and asset owners. By matching the share of underutilised resources in a peer-to-peer-based network, the rapid growth of the sharing economy has not only affected the traditional economic system, but changed the consumption pattern of consumers (Baird & Parasnis, 2011; Eckhardt & Bardhi, 2015). For instance, the annual consumers sales of Airbnb has overtaken world-leading hotel groups, such as Hilton Worldwide, by 22 per cent (Yang et al., 2017). More than 28 per cent of travellers in the US and Europe frequently use home-sharing platforms for booking accommodation (Scaggs, 2017). In the clothes-sharing sector, 44 per cent of the millennial shoppers are interested in clothes hiring (rather than buying) for special occasions (Mintel, 2018). Uber, BlaBlaCar and Zipcar in transportation, Airbnb and HomeAway in lodging, UberEat in delivery services, Zopa and Rent the Runway in clothing, and TransferWise in financial services are successful examples of sharing economy-based applications that have significantly altered many consumers' purchasing preferences (Narasimhan et al., 2018; Zhang et al., 2018a).

The means-end chain theory (MECT) suggests that consumers are goal-oriented and their consumption decisions are made in a hierarchical structure where they aim to satisfy their higher level personal values by the lower level product or service attributes (Costa et al., 2004; Gutman, 1982). They assess available products'/services' attributes and choose the products/services that are most consistent with their expected consequences of achieving their personal values and goals (Howard, 1977; Young & Feigin, 1975). Studies examining the sharing economy from a consumer perspective identified that financial benefits (Guttentag et al., 2017; Ozanne and Ballantine, 2010), social benefits (Tussyadiah, 2016; Zhang et al., 2018a) and environmental protection advantages (Hamari et al., 2016) are the main influences that drive consumers' participation in the sharing economy. More and more practitioners have therefore tried to enhance the association between the product/service attributes and personal consequences by using these factors to motive consumers' sharing economy adoption (Costa et al., 2004).

However, while many practitioners are utilising these factors in their marketing communication strategies to promote their sharing economy-based services to consumers, very few research studies have investigated the sharing economy from the SSCM perspective, which emphasises *business sustainability*. In other words, practitioners should not only focus on how to promote the benefits of the sharing economy, but also maintain a balance between organisational profitability and social welfare and aim to maintain a long-term sustainable marketplace.

2.2 Sustainable supply chain management

Supply chain management (SCM) aims to cope with customer demand in a timely manner and cost-effective to ultimately improve customer satisfaction (Christopher, 1998; Cooper & Ellram, 1993). However, with the development of the society, SCM, which is fundamentally driven by cost-effective and quality improvement, was soon proven to be undesirable (Seuring & Müller, 2008; Zhu et al., 2008). Therefore, sustainable development, which aims to fulfil the present generation's needs without harming the future generation's capability to cater to their own needs, becomes the essential of organisations (Carter & Rogers, 2008). To achieve sustainable development, SSCM that represents '*the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account which are derived from customer and stakeholder requirements*' (Seuring and Müller, 2008, p. 1700) started to attract the attention of both academics and practitioners. It is calculated to maximise organisational profitability and social welfare while simultaneously minimising environmental pollution (Hassini et al., 2012). It is the strategic integration of social, environmental and economic goals through the systematic synchronisation of inter-organisational developments to benefit all supply chain partners and the whole supply chain (Carter & Rogers, 2008). The covered three pillars (i.e. economy, society and environment) correspond to the triple bottom line, which determines the financial, environmental and social performance measures of business sustainability (Hsu et al., 2016). Building upon this triple bottom line study in the supply chain context, this study proposes a conceptualisation which focuses on six management practices in pillars: 1) IR (i.e. economic pillar); 2) CSR (social pillar); 3) ECD (environmental pillar); 4) IGM (environmental pillar); 5) SGM (environmental pillar); and 6) CGM (environmental pillar).

Adopting SSCM in organisations needs the joint effort of all partners including the focal company, suppliers and customers (Vachon & Klassen, 2006). The collaboration among these partners can improve the organisations' profitability and operational effectiveness as well as gain critical competitive advantages by diminishing wastes and improving environmental and social performance (e.g., Keating et al., 2008). For instance, SSCM can improve suppliers' environmental performance by closely cooperating in the fields of sustainable product design and sustainable procurement (Vachon & Klassen, 2006; Zhang et al., 2018b). Moreover, it can reduce the environmental pollution of products by effectively conducting the reverse logistics and continuously educating customers, which in turn will significantly enhance organisations' overall performance (Hsu et al., 2016). Therefore, SSCM is regarded as one of

the key successful enablers of the next industrial revolution by framing eco-friendly design and dropping the expenditure of resources (Prokesch, 2010).

The existing SSCM literature mainly focuses on the impacts of SSCM practices on business performance and sustainable development from the perspective of manufacturers in the manufacturing industry. For instance, Ahmadi et al. (2017) argued that the social pillar of sustainability is the most important element in achieving better supply chain performance and sustainable development for Iranian manufacturers. Shi et al. (2017) clarified that reducing the use of toxic and hazardous materials in sustainable product design and requiring suppliers to obtain environmental certificates in sustainable procurement are the key SSCM practices in achieving sustainable development for Chinese athletic equipment firms. Albino and Kühtz (2004) revealed that monitoring the resource use and pollution levels is the essential approach to achieve better production results in the Italian tiles industry. Moreover, another major part of SSCM literature discusses the effectiveness of conducting SSCM from the perspective of manufacturers in the manufacturing industry. For instance, Zhang et al. (2018b) conceptualised SSCM as internal green SCM, external green SCM, and CSR. They identified that internal green SCM contributes the most in conducting SSCM for Chinese manufacturers. Mathivathanan et al. (2018) investigated Indian automakers and clarified that committing to achieve sustainability and incorporating the triple bottom line in strategic decision-making are keys to the effective SSCM. However, a limited number of studies investigated SSCM practices and SSCM implementation in the service industry, especially from the customer side (the downstream of the supply chain). This means that the influences of SSCM practices on business performance and sustainable development in the service industry, especially the sharing economy industry, remain unclear.

3. Hypotheses development: SSCM practices

As highlighted earlier, the sharing economy aims to better utilise the idle capital to contribute to the local community, reduce waste, and protect the environment. It has an inseparable relationship with SSCM as a large number of supply chain partners (i.e. customers, sharing economy platforms, and capital suppliers) who participate in that industry.

Some scholars have conducted pioneering sharing economy studies from the SSCM perspective; however, regrettably, their adopted concepts and measures of SSCM are arguable. Hamari et al. (2016) aimed to explore the impact of SSCM on customer intention and behaviour to adopt the sharing economy. However, they conceptualised green SCM as SSCM and only investigated the general benefits of green SCM in their research survey (e.g., 'Collaborative consumption is environmentally friendly', 'Collaborative consumption is efficient in terms of using energy'). Another issue is that Hamari et al. (2016) inappropriately made the economic pillar and social pillar isolated from SSCM. Furthermore, the social pillar of SSCM in Hamari et al.'s (2016) study was not positioned to examine how sharing- economy enhance the sustainability of the local community but to investigate the social recognition and reputation aspect of customers.

Due to the incomprehensive measures of SSCM adopted by these existing studies, the findings regarding the impact of SSCM on customer behaviour and adoption intention could misinform academics and practitioners due to the inaccurate understanding of SSCM. It is therefore necessary to examine the impacts of SSCM practices conducted by sharing economy platforms on customers' adoption intention more accurately.

3.1. Investment recovery

IR aims to recouple the value of surplus assets to cut the waste of initially invested capital, which in turn reduces the cost of the provided service and product. It plays an essential role in improving the economic or financial performance of the sharing economy-based platforms by increasing the income and reducing the excess. Businesses with good financial performance are believed to operate more efficiently and provide better services and products, which are recognised as critical indicators of strong customer satisfaction (Jung & Yoon, 2013; Sanchez-Fernandez & Iniesta-Bonillo, 2009). Moreover, by implementing the monetary strategies (e.g. price competition), more new customers could be attracted, and the loyalty would be improved (Lo et al., 2015). Customers' perception of the business and customer loyalty will then help sharing economy platforms to build a positive overall business image (Miles and Covin, 2000). The improved reputation of sharing platforms could ultimately motivate customers to consume more frequently (Campbell et al., 2014). This reveals the discussion among researchers regarding the impact of IR conducted by sharing economy platforms on consumers' using intention. Therefore, the hypothesis below was formulated.

Hypothesis 1 (H1): IR practices conducted by sharing economy platforms positively affect customers' intention to participant in sharing economy-based services/products.

3.2. Corporate social responsibility

CSR represents the social aspect of SSCM. It aims to embody the legitimate, financial, moral and arbitrary responsibilities in the business (Jamali & Mirshaje, 2007). According to Zhang et al. (2018b), CSR activities include diversity management and local community development, which are helpful for enterprises to establish SSCM in the long term. Diversity management is done to assist minority groups in the local community (Carter & Easton, 2011). Local community development improves and promotes the local community's living standard and culture (Mani et al., 2016). Thus, CSR practices are local community-oriented practices that can improve sharing economy platforms' reputation and brand image. The positive reputation of sharing economy platforms could then enhance customer satisfaction, as customers usually prefer experiencing authentic local products and services (Holmes & Yan, 2012). Therefore, the promotion of sharing economy platforms' CSR practices could result in higher customer loyalty, as customers are easily attracted by local services and products provided by minority business enterprises (Nikolaeva & Bicho, 2011). This enhances customers' willingness to adopt services provided by companies which are involved in social causes and motivates customers to use sharing economy-based services more frequently (Samu & Wymer, 2009). This reflects the debate among academics concerning the

impact of CSR adopted by sharing economy platforms on consumers' usage intention. Therefore, the hypothesis below was developed.

Hypothesis 2 (H2): CSR practices conducted by sharing economy platforms positively affect customers' intention to use sharing economy-based services/products.

3.3. Eco-design

ECD is an advanced element of SSCM as it can bring significant environmental improvement to the business (Zhu et al., 2012). It represents the approach to embed green value into product/service design (Zhu & Shah, 2018; Kuo et al. 2019). Reducing the consumption of resources, boosting the use of recyclable supplies, and cutting the employment of hazardous materials are the key concerns of ECD practices (Zhang et al., 2018b). ECD practices work as a distinctive attribute of the service to differentiate itself from other services (Manaktola & Jauhari, 2007). Moreover, with the growing knowledge regarding environmental concerns, customers are more willing to choose the business which provides rigorous green initiatives. This could significantly improve customer satisfaction and enhance customer self-esteem (Manaktola & Jauhari, 2007; Kang et al., 2012; Ahmed et al. 2018). Consequently, customers are more intent to adopt sharing economy platforms and give a positive evaluation to the provided green services (Kang et al., 2012; Xu & Gursory, 2015). This represents the review of the relationship between ECD adopted by sharing economy platforms and customers' intention to adopt sharing economy services/products. Hence, it is suggested that ECD practices can attract and motivate customers to use sharing economy business. This led to the formulation of the hypothesis below.

Hypothesis 3 (H3): ECD practices conducted by sharing economy platforms positively influence customers' intention to use sharing economy-based services/products.

3.4. Internal green management

IGM represents the practices independently adopted by individual businesses that aim to improve their environmental performance (Zhu et al., 2013). It is closely related to the environment pillar of SSCM. IGM is composed of the commitment from senior managers regarding environmental concerns, the establishment of a clear and comprehensive environment policy, and the effective employee participation in environment improvement (Zhu et al., 2013; Zhang et al., 2018b). It shows the business's capability to diminish and avoid the pollution caused by its daily business practices (Zhang et al., 2018b). Xu and Gursory (2015) indicated that organisations in which set up strong policies and practices regarding environmental protection can more easily attract customers, especially those who have high environmental awareness. Moreover, customers are more willing to pay for services that are offered by businesses that have better environmental actions (Han et al., 2011). Therefore, IGM could improve customer orientation and customer ratification (de Leaniz & Rodríguez, 2015), especially for a business that has an effective employee- customer interaction (Kang et al., 2012). Therefore, the fourth hypothesis relates to whether

IGM practices can attract and motivate customers to use services/products provided by sharing economy businesses.

Hypothesis 4 (H4): IGM practices conducted by sharing economy platforms positively affect customers' intention to use sharing economy-based services/products.

3.5. Supplier green management

SGM refers to the environmental practices that require outward collaboration with suppliers who represent upstream supply chain partners (Vachon & Klassen, 2008; Zhu et al., 2013; Zhang et al., 2018b). It aims to decrease the negative environmental impacts and achieve the overall environmental objectives through the collaborative implementation of SSCM practices with suppliers (de Giovanni, 2012; Zhang et al., 2018b). SGM is mainly composed of the green certification of suppliers (e.g. eco-label), the environmental responsibility of suppliers (e.g. the suppliers' involvement in achieving environmental objectives), and the evaluation of suppliers' environmental performance (Zhu et al., 2008; 2013). These collaborative practices can reduce resource consumption and waste and improve environmental performance. Moreover, if a service supplier cannot effectively take environmental protection actions, customers are more likely to perceive the service as less sustainable, which in turn will influence customers' buying intention (Wagner et al., 2009). Therefore, customers' perception of suppliers in the fields of environmental actions significantly influences customers' willingness to use and purchase the sharing economy platforms' services and their preferences for sharing economy platforms' brand image. The positive relationship between SGM and customers' willingness and intention to adopt sharing economy services/products reflects the fifth hypothesis.

Hypothesis 5 (H5): SGM practices conducted by sharing economy platforms positively affect customers' intention to use sharing economy-based services/products.

3.6. Customer green management

CGM represents the environmental practices that are collaboratively conducted with customers (Zhang et al., 2018b). Zhu et al. (2013) and Vachon and Klassen (2008) suggested CGM plays an important role in adopting effective SSCM to reduce the negative environmental impacts. Empirical studies identified that customer involvement in ECD, cleaner production, saving the resources, and reducing green gas pollution are the key to achieve the environmental objectives (Zhang et al., 2018b; Zhu et al., 2008; 2013; Yang and Weber, 2019). Moreover, Zhang et al. (2015; 2019) identified that retailers could add more value to sustainable supply chains by better educating customers and promoting the green products. Therefore, the adoption of these green initiatives could improve customer satisfaction by increasing customers' social responsibility and moral satisfaction (Hartmann & Ibanez, 2006; Kang et al., 2012). Ultimately, the higher level of customer satisfaction will lead customers to purchase services more frequently from the sharing economy platforms which conduct CGM more effectively. Therefore, the association between CGM and

customers' sharing economy usage intention directs the sixth hypothesis, which is related to whether CGM practices can attract and motivate customers in the sharing economy business.

Hypothesis 6 (H6): CGM practices conducted by sharing economy platforms positively affect customers' intention to use sharing economy-based services/products.

Figure 1 presents the research framework of this study.

4. Methodology

A two-stage study was carried out. In stage one, a quantitative survey containing closed- ended questions was adopted to examine the impacts of SSCM practices conducted by sharing platforms on customers' sharing economy usage intention. In stage two, semi- structured interviews were conducted to further support and explain why customers are/are not attracted by certain SSCM practices.

4.1. Stage one study: measurement generation

The scale development process of SSCM practices and customers' intention to use sharing economy services/products strictly followed the suggestion of Shah and Ward (2007) and Li et al. (2005). First, the key literature on SSCM and customers' intention to use sharing economy services/products was reviewed. Based on the comprehensive literature review (see Sections two and three and Appendix A), the definitions of the constructs (i.e. SSCM practices and customers' intention to use sharing economy services/products) as well as the measurement items for each construct are established (Hamari et al., 2016; Xu & Gursory, 2015; Zhang et al., 2018b; Zhu et al., 2008; 2013). This procedure could effectively ensure the content validity of the measurement model (Shah &Ward, 2007; Li et al., 2005;).

Second, regarding the initial measurements, five SSCM and the collaborative consumption industrial experts were consulted to clarify the wording of each measurement and ensure the reliability. After collecting the qualitative comments from experts, the Q-sort method was carried out by analysing Cohen's Kappa (Jarvenpaa, 1989). The average Cohen's Kappa score was 0.82, which is larger than the threshold (0.65) suggested by Jarvenpaa (1989). Therefore, the reliability of the measurement generation was achieved.

Based on these two rigorous steps, 22 items related to SSCM practices and five items related to customers' intention to adopt sharing economy services/products were finalised and adopted in the stage one study. These 27 measurements are summarised in Appendix A.

4.2. Stage one study: questionnaire design

In this study, each construct contains more than three measurements to enhance the validity. All items were in a 7-point Likert scale (from 1 = strongly disagree to 7 = strongly agree) by which respondents could sufficiently choose their level of agreement for each measurement.

An Instruction Section that explains the purpose and the background of the study was included at the beginning of the questionnaire to assist the survey respondents in answering the questions. Six demographic items (gender, age, frequency of using the sharing economy, education, salary, and nationality) were also included in the questionnaire.

The initial questionnaire was sent to five academics by email to evaluate the adequacy of each item that measures the corresponding construct. The average adequacy score of each statement was above 3 (from 1 = low adequacy to 7 = high adequacy), suggesting that the measures are appropriate for inclusion in this questionnaire. The procedure was conducted to ensure that a well-designed and pilot study-tested questionnaire was developed and used.

4.3. Stage one study: data collection

To investigate the impacts of SSCM practices of sharing economy platforms on customers' intention to use sharing economy services/products, this study targeted customers with related knowledge and experience of the sharing economy. In October 2018, 420 valid respondents ($1 incentive) were recruited via Amazon Mechanical Turk. Amazon Mechanical Turk is a trustworthy data collection platform whose data quality has been proved to be consistent and reliable (Buhrmester et al., 2011). The demographic information of respondents is summarised in Table 1. Hutcheson and Sofroniou (1999) suggested at least 150 valid respondents should be used to run a model that contains 25 items (22 items for the independent variables and five items for the dependent variable in this research). Therefore, 420 valid respondents are considered statistically sufficient. The replies of early responders were compared to those of late responders by running an χ^2 difference test. The results showed no potential non-response bias (Hair et al., 2006). Harman's single factor test was conducted in order to mitigate the common method variance, as suggested by Flynn et al. (2010). The result revealed that the first factor of the 20 extracted factors with an eigenvalue above 1.00 explains only 29.20% of the total variance. This suggests the common method bias is not an issue as 29.20% cannot represent the majority of the total explained variance.

4.4. Stage two study: semi-structured interview

The stage two study aimed to collect more fruitful information regarding customers' intention to participate in sharing economy-based activities and use sharing economy services or products, and clarify the possible hidden connection between customers' choice and SSCM practices of sharing economy platforms by conducting semi-structured interviews. An interview protocol that consisted of eight open-ended questions was designed from the literature and the findings of the stage one study. These questions are summarised in Appendix B. Ten in-depth interviews were conducted with interviewees selected from participants in the stage one study. Interviewees were selected based on their experience and knowledge of sharing economy and SSCM. As the identities of the participants need to remain confidential, their names were coded in the analysis. The interviews were audio recorded, and the average duration of each interview was approximately 30 minutes. The recordings of the semi-structured interviews were transcribed within 24 hours of each

interview. Subsequently, the coding, reflecting remarks and sorting of data were conducted following the suggestions of Miles et al. (2016) and Yin (2017). Following this, the within-case analysis and cross-case analysis were conducted (Eisenhardt & Graebner, 2007; Yin, 2017).

5. Data analysis and results

5.1. Measurement evaluation

The measurement refining process was conducted by adopting exploratory factor analysis (EFA) using SPSS. The result of the Kaiser-Meyer-Olkintes test was 0.947, which is greater than 0.6. This suggests that the sample is adequate to run the EFA (Worthington & Whittaker, 2006). Three evaluation criteria (i.e. factor loadings, eigenvalue, total explained variance) were adopted to test all 27 items (Chen & Paulraj, 2004). According to Chen and Paulraj (2004) and Hair et al. (2006), factor loadings of measurements should be above 0.4, the eigenvalue of each construct should be larger than 1, and the total explained variance should be greater than 50%. Consequently, three items (i.e. CSR3, CSR4, CGM4) were deleted. Appendix A shows the EFA results. The satisfactory EFA results also verify the sufficient unidimensionality of the measurement.

After refining the items (i.e. 24 items left), confirmatory factor analysis (CFA) was carried out by running SPSS and AMOS 25 to evaluate the consistency reliability, discriminant validity and convergent validity at the construct level. Consistency reliability was evaluated by Cronbach's alpha and composite reliability (Hair et al. 2006). The consistency reliability of the construct is achieved if the composite reliability and Cronbach's alpha of each construct are above 0.7 (Fornell & Larcker, 1981; Nunally & Bernstein, 1994; Hair et al., 2006), shown in Table 2. Convergent validity was tested by evaluating average variance extracted (AVE). As listed in Table 2, the AVE values of each construct are higher than the threshold (i.e. 0.5) recommended by Hair et al. (2006), which means that the construct could explain more than 50% of the variance of its items. Discriminant validity was assessed to verify whether one construct is truly distinct from other constructs by comparing the root square of AVE and the construct correlation (i.e. Fornell-Larcker criterion). As presented in Table 2, discriminant validity is achieved, as the square root of AVE for each construct is higher than the correlation between the other constructs and that construct.

5.2. Structural model evaluation and hypotheses testing

The model fit of the structural model was assessed using AMOS 25. The evaluation of the fit criteria (shown in Table 3) indicated that they were within the recommended values: normed CMIN/DF = 1.957, GFI = 0.902, AGFI = 0.864, RMR = 0.086, NNFI = 0.932, IFI = 0.955, CFI = 0.955, PNFI = 0.77, RMSEA = 0.042. Hence, a good fit of the predicted model is achieved. Table 4 shows the path coefficient and the corresponding *p* values of each hypothesis. In this study, customers' intention to adopt sharing economy services/products is positively influenced by IR practices ($\gamma_1 = 0.301$, $p < 0.001$) and CSR practices ($\gamma_2 = 0.230$, $p < 0.01$). However, there is no evidence to show that the green-related practices (i.e. ECD,

IGM, SCM, CGM) can influence customers' intention to adopt sharing economy services/products. This leads to H3, H4, H5 and H6 being rejected by the statistical results. Figure 2 summarises the result of hypotheses testing, in which the solid arrows (between SSCM constructs and customer intention construct) represent the supported hypotheses and the dashed arrows (between SSCM constructs and customer intention construct) reveal the rejected hypotheses. Other arrows (between SSCM constructs and measurements) show the effect size.

5.3. Semi-structured interviews

After transcribing the ten semi-structured interviews, the within-case analysis was conducted to identify individual customer consumption behaviour when considering SSCM practices of sharing economy platforms for each participant. The transcribed data was used to identify categories, patterns and differences in an incremental process. With the help of the interview protocol, 'Consumption frequency of using sharing economy-based services/products', 'Reasons to choose and participate in the sharing economy', 'Most attracted SSCM practices of sharing economy platforms' and 'Green promotion' were generated as the four major themes. The data of each interview was then clustered into these categories by searching the keywords. This was followed by the cross-case analysis by comparing and integrating the information regarding the above-mentioned four major themes of the ten participants. Table 5 summarises the key results of the cross-case analysis. It is clear that six participants used sharing economy platforms more than four times per week. Regarding the 'Reasons to choose the sharing economy', all the participants regarded cheap price as their reason to use sharing economy platforms. Seven participants also recognised the convenience of sharing economy platforms. Moreover, in the field of 'Most attractive SSCM practices of sharing economy platforms', all the participates stated that SSCM practices related to the economic pillar attract them most as the low price of sharing economy services. Six interviewees thought they could boost the local economy and improve the local employment rate by using sharing economy platforms. Another two participants considered that the energy saving and CO_2 emission reduction practices are the most attractive. Furthermore, with regard to 'Green promotion', participants expressed their concerns about how to promote the green-related SSCM practices of sharing economy platforms. Eight participants believed that green-related SSCM practices of sharing economy platforms lack promotion. Six participants stated that they would use sharing economy platforms more frequently if they knew that the platforms conducted various green-related SSCM practices in advance. Seven participants indicated that they would use sharing economy platforms more frequently if the green-related SSCM practices could reduce the service cost. Another three participants suggested that sharing economy platforms should use advertisements to promote green-related practices as Uber did to promote its contribution to society.

6. Discussion

6.1. IR: economy-related SSCM practice

IR is a significant SSCM practice that helps sharing economy platforms to better utilise assets and improve financial performance. Based on the hypothesis testing in section 5.2, IR has the most significant impact on customers' willingness intention to adopt sharing economy services/products among all the SSCM practices. The finding clarifies that the low price due to better utilised idle assets can motivate customers to pay for the service. Participant DNS stated in the interview: '*I enjoy Didi (a Chinese ride-sharing company) a lot as it's much cheaper than the normal taxi. If I choose to use Sunfengche (hitchhiking), I can even save more money*'. This shows that a price cut through IR that aims to improve capital utilisation is significant to customers, especially those who are sensitive to the price. Sharing economy platforms conduct IR to significantly increase the supply of products and services, which effectively reduces the average cost. Moreover, due to the rapid development of information technology, the information cost of leasing transactions via sharing economy platforms is significantly reduced. Therefore, this motivates customers to change their consumption behaviours from buying the ownership of products and services to paying for the right to use certain services and products, which directly brings more benefits to customers. Furthermore, this finding reveals that customers are easily attracted by the company which has better financial performance. During the interview, participant AZD stated: '*I prefer Uber than the black cab. For such a big company that earns millions of dollars per year, its service is better than the cab*'. This shows that customers consider that companies with good financial performance provide high-quality service (Xu & Gursory, 2015). Due to the good financial performance, sharing economy-based platforms could invest further in training to further improve the services, which in turn would attract more customers. Therefore, sharing economy platforms should continue implementing IR by effectively linking supply and demand and reducing the information asymmetries as customers would get more benefits from efficient capital utilisation, which in turn would bring more sales to the business.

6.2. CSR: society-related SSCM practice

Although it has been proved that IR is the core SSCM practice of sharing economy platforms that influences customers' usage intention, this study also clarifies that CSR can positively affect customers' intention to use sharing economy services/products. This is consistent with the finding of Chi and Gursoy (2009) and Martinez and Bosque (2013). CSR plays a crucial role in the sharing economy to contribute to society by emphasising the local community and minority groups. For example, millions of job opportunities have been generated by the development of the sharing economy. This significantly improves the living standard of local communities by generating new and extra incomes. During the interview, participant CAS indicated: '*You will never meet that many drivers from minority groups in Edinburgh if there is no Uber. Every time I use Uber, I feel like I am helping the minority to earn some money*'. This clearly shows that customers are attracted to the business which cares and makes a contribution to the local community. The enhanced reputation of sharing economy platforms through the social contribution will therefore improve customer loyalty. Moreover, participant HPO explained her understanding of CSR from another perspective: '*I prefer the local family flat than the big international hotel chain. Live in these local family, I can better understand their culture and life. That's why I choose Airbnb*'. This verifies that customers

are willing to support local communities (e.g. family hotels) and want to pay for the service that brings customisations and specifics (Xu & Gursory, 2015). By promoting the local culture and shortening the distance between customers and the local community, sharing economy platforms could effectively provide unique products and services to meet customers' diversified expectations. That is why sharing economy platforms that provide the connection between customers and local communities could attract and motivate customers. Therefore, sharing economy platforms should also concentrate on CSR by providing more job and business opportunities to local communities and promoting the local culture, as this can significantly enhance customer satisfaction and improve financial performance.

6.3. ECD, IGM, SGM and CGM: green-related SSCM practices

ECD, IGM, SGM and CGM are key environment-related practices of SSCM. However, no evidence in this study proves the significant impact of these green SSCM practices on customers' intention to adopt sharing economy services/products. This is contrary to the results of Hamari et al. (2016). The non-significant impact may be due to several reasons. First, this study investigated four detailed green-related SSCM practices that contain 14 measurements in total. However, Hamari et al. (2016) only included five general measurements that show the benefits of conducting green SSCM in their study. These general measurements (e.g. become eco-friendly, save resources) are easily visible and noticeable to customers. However, the 14 detailed green SSCM practices in this study which present sharing economy platforms' daily environmental operations are not easily recognised by customers. According to the interview results, eight participants stated that the promotion of sharing economy platforms' green practices is very limited. This makes customers' awareness of the extent to which sharing economy platforms engage in green practices very low. Second, customers are willing to pay for sharing economy platforms' SSCM practices that can quickly or directly bring benefits to them (Tarfasa & Brouwer, 2013). Therefore, IR and CSR significantly influence customers' intention to use sharing economy platforms. However, the 14 green-related SSCM practices aim to bring long-term benefit and therefore are unlikely to offer direct returns to customers during their consumption period. That is why in the interview participant GEG claimed: '*Sharing economy platforms should provide us some monetary incentives (e.g. lower price) when promoting green-related practices. Otherwise, I cannot feel the connection between my consumption and environment protection*'. This finding verifies the insufficiency of promoting green-related SSCM practices in the sharing economy. Lacking the explicit customer education regarding sharing economy platforms' green practices directly makes customers emphasise the cost reduction and product/service variability of sharing economy platforms. This in turn further impedes sharing economy platforms' promotion of environmentally friendly offerings. To effectively endorse the environmental operations of sharing economy platforms to customers, adopting a more effective way to attract customers' attention and diffuse the importance of green practices to them is crucial. For instance, participant CAS mentioned: '*Sharing economy platforms should learn Uber's advertisement, which promotes its social contribution, to better endorse their green-related practices to customers*'. Therefore, sharing economy platforms should apply appropriate advertising strategies to design better advertisements. For

different types of customers, sharing economy platforms need to select advisable designing language to either directly promote the facts regarding green practices (e.g. numbers and statistics) or diffuse personal values (e.g. feelings and stories) of green practices.

7. Conclusion

In summary, this study aims to investigate the impacts of SSCM practices conducted by sharing economy platforms on customer adoption intentions. A questionnaire that includes 22 SSCM measurements and five customer behavioural measurements is developed. Furthermore, 420 valid replies from sharing economy customers are analysed by using Structural Equation Modelling (SEM). It is found that the economy-related SSCM practices (i.e. IR) have a significant impact on customer behaviour intention, followed by society- related SSCM practices (i.e. CSR). However, green-related SSCM practices (ECD, IGM, SGM, CGM) cannot influence customer behaviour intention. Based on ten semi-structured interviews, the lack of promotion of green-related SSCM practices to customers is the key barrier in sharing economy platforms. Providing monetary incentives and designing more provoking advertisements are two possible methods to boost the benefit of conducting green- related SSCM practices.

This study contributes to the theory and industry. This study is one of the first to investigate the relationships between SSCM practices of sharing economy platforms and customer behaviour intention. It closely links SSCM and the sharing economy from the customer perspective. Furthermore, compared with the existing similar collaborative consumption and sharing economy studies, this research adopted a more comprehensive concept of business sustainability, which contained the major SSCM practices. The findings clarified the effectiveness of these pillars from the consumer adoption perspective. Unsurprisingly, economic pillars play a major role in the sharing economy. The significance of the social/society pillars also suggested that consumers consider the social benefits of sharing economy-based services when placing an order. Therefore, companies should emphasise the social benefits and address these society practices to attract and motivate more consumers. Moreover, the environment pillars are not having a significant effect on consumer adoption intention, suggesting that although more and more companies are making efforts to provide environmentally friendly offerings (Demailly and Novel, 2014), the effectiveness is limited, as the effects of environment pillars only offer benefits that consumers cannot experience directly or immediately. Nevertheless, as consumers' motivations can change over time, with the increasing trend of environmental protection awareness, more consumers are expected to appreciate the environmental benefits provided by sharing economy services (Böcker & Meelen, 2017). Sharing economy-based companies should re-evaluate their environment-related SSCM practices and promote the value of environmental benefits that their services offer, and increase consumers' awareness of the connection between consumption and environmental and resource balance. This study provides practitioners with insights into identifying the current status of sustainability in the sharing economy, which could help them to find effective methods (e.g. advertisement design) to boost customer numbers and sales.

Nevertheless, this study is not without its limitations. First, this study investigates the whole sharing economy industry. However, each sharing economy sector may contain specific characteristics which mean that their customers may have different perceptions of SSCM practices. Therefore, a future study could focus on the individual sharing economy sector to explore the impact of SSCM practices on customer behaviour intention and conduct a comparison study. Second, the 420 valid participants came from ten different countries. The data of subgroups is not large enough to run the proposed model and it is difficult to conduct a comparison study regarding different customer categories in this research. Therefore, a future study could expand the sample size and conduct an international comparative study on this topic. Third, only ten semi-structured interviews were conducted due to the limited access to the participants. Although they provided fruitful information to identify the root causes of the impacts, in a future study, more participants should be invited to provide more insights to discuss the statistical results. Despite recent extensive research on the collaborative consumption, there has been limited exploration and testing, and therefore there is limited understanding of the sustainability perspective of the sharing economy. It is intended that this study of the sharing economy from the SSCM perspective will draw further attention to this area from both practitioners and researchers.

Appendix A: Measurements and EFA results

Constructs (Eigenvalues; Total variance explained)	Measurements (Factor Loading)	Source
Investment Recovery (2.811; 70.269%)		
IR1	I could participate in better utilizing excess materials/inventories. (0.8)	*Zhu et al. (2013)*
IR2	I could participate in better utilizing used materials. (0.841)	
IR3	I could participate in better utilizing the excess capital equipment. (0.823)	
IR4	I could participate in reducing the selling price of corresponding products/services. (0.66)	
Corporate Social Responsibility (1.746; 87.3%)		
CSR1	I could participate in creating more jobs for the local community. (0.843)	*Zhang et al. (2018b)*
CSR2	I could participate in creating more income/wealth for the local community. (0.885)	
CSR3*	I could participate in helping the minority/women. (-)	
CSR4*	I could participate in helping the local community for the cultural development. (-)	
Eco-design (2.409; 80.316%)		
ECD1	I could experience products and services from the company that designs to reduce the consumption of materials/energy. (0.842)	*Zhu et al. (2008), Zhu et al. (2013)*
ECD2	I could experience products and services from the company that designs to reduce the use of hazardous materials/manufacturing process. (0.826)	
ECD3	I could experience products and services from the company that designs to use recyclable/renewable materials/energy. (0.849)	
Internal Green Management (2.560; 85.33%)		
IGM1	I could experience eco-friendly products and services from the company whose employees effectively participate in the environment protection. (0.866)	*Zhu et al. (2008), Zhu et al. (2013), Zhang*

IGM2	I could experience eco-friendly products and services from the company that has a comprehensive environmental management system. (0.904)	*et al. (2018b)*
IGM3	I could experience eco-friendly products and services from the company that has a clear environmental mission. (0.881)	
Supplier Green Management (3.201; 80.026%)		
SGM1	I could experience eco-friendly products and services from the company whose major suppliers are ISO 14000 certificated. (0.729)	*Zhu et al. (2008), Zhu et al. (2013), Zhang et al. (2018b)*
SGM2	I could experience eco-friendly products and services from the company who support suppliers to improve green practices. (0.89)	
SGM3	I could experience eco-friendly products and services from the company who closely cooperate with suppliers regarding the environmental objectives. (0.917)	
SGM4	I could experience eco-friendly products and services from the company who evaluate suppliers' environmental practices regularly. (0.893)	
Customer Green Management (2.262; 75.417%)		
CGM1	I could participate in eco-friendly design of corresponding products/services. (0.756)	*Zhu et al. (2013), Xu and Gursory (2015)*
CGM2	I could participate in cleaner production. (0.859)	
CGM3	I could participate in reducing the greenhouse gas. (0.783)	
CGM4*	I could participate in reducing the utilization of natural resources. (-)	
Customer's Intention (4.071; 80.349%)		
CI1	I am willing to use sharing platforms/services in future. (0.865)	*Hamari et al. (2016)*
CI2	I will definitely use sharing platforms/services again in future. (0.88)	
CI3	I am willing to use sharing platforms/services more often in future. (0.906)	
CI4	I will definitely use sharing platforms/services more often in future. (0.91)	
CI5	I will recommend sharing platforms/services to others positively. (0.921)	

Measurements with * were deleted after EFA test.

Appendix B: Interview Questions

Question Number	Open-ended Questions
Q1	How often do you use sharing economy platforms?
Q2	Why did you choose to use sharing economy platforms?
Q3	Among economic, environmental, and social related SSCM practices of sharing economy platforms, which one is the most important to influence your intention of using sharing economy platforms?
Q4	Do you think the economic related SSCM practice is the most important? Why?
Q5	Do you think the social related SSCM practice is the most important? Why?
Q6	Do you think the environmental related SSCM practice is the most important? Why?
Q7	If you know the status of sharing economy platforms' environmental related SSCM practices, do you think this will influence your intention of using sharing economy platforms?
Q8	What should sharing economy platforms do to promote the importance of environmental related SSCM practices?

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Table(s)

Table 1: Demographic information of respondents

Variables	Items	Frequency	Percentage
Gender	*Male*	232	55.2%
	Female	188	44.8%
Age	*18-23*	76	18.1%
	24-30	142	33.8%
	31-37	113	26.9%
	38-44	58	13.8%
	45 above	31	7.4%
Weekly frequency of using sharing economy platforms	*1-3*	149	35.5%
	4-6	239	56.9%
	7 Above	32	7.6%
Education	*High School*	124	29.5%
	Undergraduate	167	39.8%
	Postgraduate	116	27.6%
	PhD	13	3.1%
Monthly disposable income	*0-$500*	78	18.6%
	$501-$1000	121	28.9%
	$1001-$2000	82	19.5%
	$2001-$3000	110	26.2%
	$3000 Above	29	6.8%
Nationality	*USA*	177	42.1%
	UK	112	26.7%
	China	72	17.1%
	Others	59	14.1%

Table 2: Construct reliability and validity

	IR	CSR	CGM	ECD	IGM	SGM
IR	**0.929***					
CSR	**0.595**	**0.925***				
CGM	**0.656**	**0.748**	**0.918***			
ECD	**0.618**	**0.614**	**0.774**	**0.937***		
IGM	**0.594**	**0.509**	**0.742**	**0.89**	**0.957***	
SGM	**0.566**	**0.565**	**0.745**	**0.896**	**0.948**	**0.959***
Cronbach's alpha	*0.856*	*0.865*	*0.874*	*0.877*	*0.894*	*0.895*
CR	*0.864*	*0.855*	*0.842*	*0.877*	*0.895*	*0.898*
AVE	*0.6415*	*0.747*	*0.641*	*0.704*	*0.781*	*0.740*

Bold numbers with * represent corresponding constructs' square root of AVE. Other bold numbers are construct correlations.

Table 3: Model fit evaluation

Evaluation Criteria	Model fit results	Threshold (Hair et al., 2006; Shah and Goldstein, 2006)
CMIN/DF	1.957	≤2
GFI	0.902	≥0.90
AGFI	0.864	≥0.80
RMR	0.086	≤0.10
NNFI	0.932	≥0.90
IFI	0.955	≥0.90
CFI	0.955	≥0.90
PNFI	0.77	≥0.70
RMSEA	0.042	≤0.05

Table 4: Hypothesis testing results

Hypotheses	Path coefficient and p value	Decision
H1: IR practices conducted by sharing economy platforms positively influence customers' intention of using sharing economy based services/products.	$\gamma 1 = 0.301$ $p < 0.001$	**Supported**
H2: CSR practices conducted by sharing economy platforms positively influence customers' intention of using sharing economy based services/products.	$\gamma 2 = 0.230$ $p = 0.006$	**Supported**
H3: ECD practices conducted by sharing economy platforms positively influence customers' intention of using sharing economy based services/products.	$\gamma 3 = 0.244$ $p = 0.096$	**Rejected**
H4: IGM practices conducted by sharing economy platforms positively influence customers' intention of using sharing economy based services/products.	$\gamma 4 = 0.422$ $p = 0.075$	**Rejected**
H5: SGM practices conducted by sharing economy platforms positively influence customers' intention of using sharing economy based services/products.	$\gamma 5 = -0.305$ $p = 0.178$	**Rejected**
H6: CGM practices conducted by sharing economy platforms positively influence customers' intention of using sharing economy based services/products.	$\gamma 6 = -0.122$ $p = 0.264$	**Rejected**

Table 5: Semi-structured interviews' results

	Themes			
	Consumption frequency of the sharing economy	**Reasons to choose the sharing economy**	**Most attracted SSCM practices of sharing economy platforms**	**Green promotion**
Results	1. Four times per week (Four participants) 2. Three times per week (Two participants) 3. One time per week (Two participants) 4. Five times per week (One participant) 5. More than five times per week (One participant)	1. Cheap (Ten participants) 2. Convenient (Seven participants) 3. Better service (Four participants) 4. Follow the trend/fashion (Three participants) 5. Closer to the local life (Two participants) 6. Lifestyle (Two participants)	1. Economic related: Cut down the price of services and products (Ten participants) 2. Social related: Contribute to the local society and economy (Six participants) 3. Economic related: Better utilise the idle equipment (Four participants) 4. Social related: Help the local community especially the minority groups (Two participants) 5. Social related: Promote the local culture (Two participants) 6. Green related: Reduce CO_2 emission (Two participants) 7. Green related: Save natural resources (Two participants)	1. Not familiar with the green related SSCM practices of sharing economy platforms (Eight participants) 2. Use sharing economy platforms more frequently if the green related SSCM practices could bring monetary benefits (Seven participants) 3. Rethink their consumption intention if they understand the importance of the green related SSCM practices in advance (Six participants) 4. Design and broadcast better Ads to promote the green related SSCM practices (Three participants) 5. More strict governmental regulation on the green related SSCM practices (Two participants)

Figure(s)

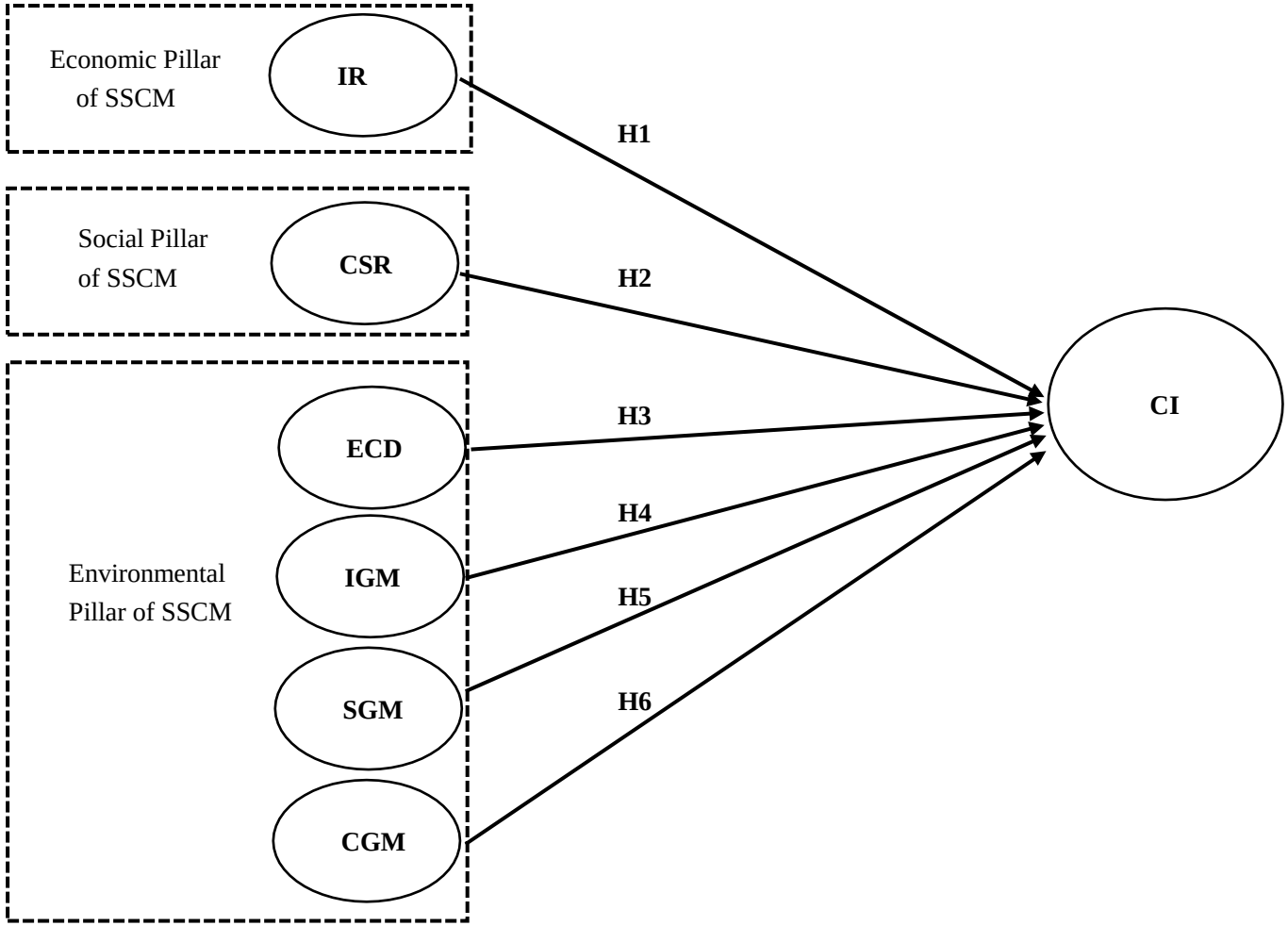

Figure 1: Research model

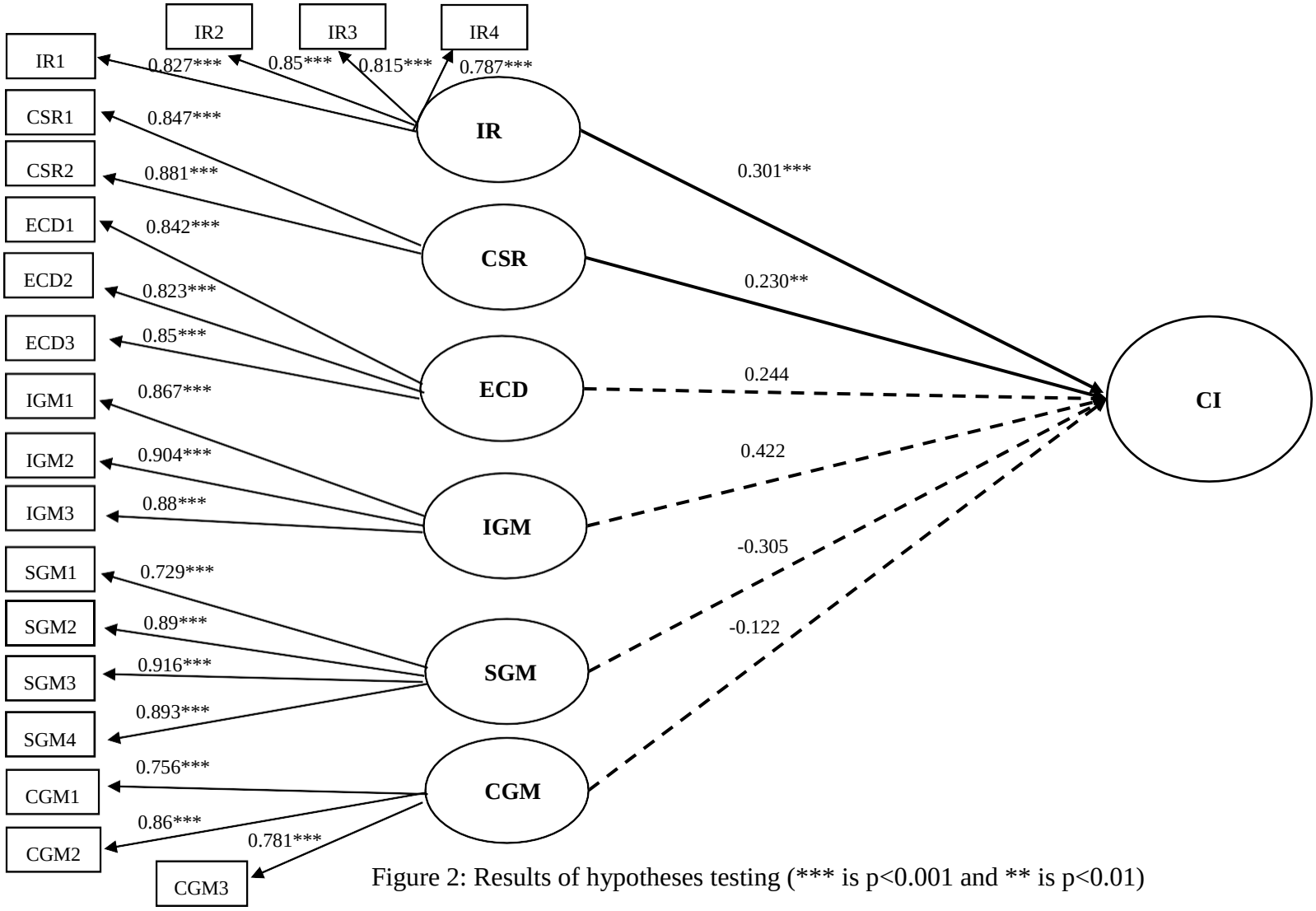

Figure 2: Results of hypotheses testing (*** is p<0.001 and ** is p<0.01)