

Sustainable consumption behaviours in P2P accommodation platforms. An exploratory study

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Abstract

This paper examines how Sustainable consumption behaviours are assembled in P2P platforms, based on 4 factors - Services portfolio complexity, Network membership, Reputation and Innovative practices - and its impact on P2P platform performance. Using data from one peer-to-peer (P2P) accommodation platform in Romania and based on 2556 observations, we tested the research hypothesis using Ordinary least squares (OLS) regression. Specifically, Services portfolio complexity positively influences Sustainable consumption behaviours, while Network membership has a negative influence. Services portfolio complexity has a positive influence on Sustainable consumption behaviours when Innovative practices are high. Finally, Sustainable consumption behaviours positively influence P2P platform performance.

Keywords: customer sustainable behaviours; P2P platform; Services portfolio complexity; Network membership; Reputation; Innovative practices

1. Introduction

Sharing economy has facilitated Peer-to-peer (P2P) platforms development through new applications in connectivity technologies (Valdés et al., 2015). The new economic context, where P2P platforms appear to become increasingly common, differs from the traditional one by facilitating a strong connection between businesses and users in multiple ways (Fremstad, 2018). These platforms offer opportunities for new modes of production and resource allocation, scalable technological infrastructures, and a deeper focus on sustainability (Bauwens et al., 2017). More, according to Raju et al. (2019) P2P technologies “divide the data or resources between the peers for managing the network bandwidth, network participants and processing powers. During the data distribution process in the P2P environments, accuracy, computation complexity and distributed clustering accuracy are the important issues as they reduce the entire system performance” (p.1). Spaho et al. (2014) considers that P2P networks, will be very important for future distributed systems and applications in knowledge based economy .However, the full potential of the P2P context remains unexplored and insights into these newer ways of doing business or what makes them successful are still poorly surveyed.

Sustainable consumption behaviours (SCB) are defined as voluntary behaviours that support sustainability (Sigala, 2014; Prothero et al., 2011). Various studies have discussed the role of

sustainability (Heinrichs, 2013; Sahakian et al., 2014; Antonetti et al., 2014), such as creating and maintaining SCB (Martin, 2016), or generating new forms of SCB (Yates, 2018; Mccollough, 2010). However, specific SCB need further analysis. Thus, this paper proposes the following research questions:

- How can SCB be enhanced?
- What is the impact of these SCB on P2P platform performance?

Hence, we empirically examined different approaches in order to highlight the SCB of the clients in the P2P platform and their impact on the performance of the platform.

The paper is organized as follows: Section 1 provides the rationale of the study and presents the research questions. Section 2 presents the theoretical background and proposes the research hypotheses. Section 3 presents the study. Section 4 discusses the implications of the findings and highlights the conclusions.

2. Research model and hypotheses

The input variables are antecedents of P2P platform performance.

2.1. Services portfolio complexity

The services portfolio is a cluster of closely related, functionally similar services sold to the same customer or having the same price range (Tallman et al, 2004). Essentially, services portfolio complexity consists of the assortment of services offered (Duysters et al., 2011). Due to increased heterogeneity of customers' needs, P2P platforms tend to extend their services or offer new services, hereby making their portfolio more complex (Tallman et al, 2004).

An extensive range of services offers the opportunity to boost sales on P2P platforms (Fernhaber et al., 2012). The complexity of services portfolio is particularly relevant given the ease and simplicity with which customers can chose another host or property on the same P2P accommodation platform. Thus, having properties offering a larger services portfolio complexity will be beneficial to both properties and platform. Hence, we hypothesize that:

H1. *Services portfolio complexity positively influences Sustainable consumption behaviours.*

2.2. Network membership

Networks are one of the more common forms of inter-organizational relationships. Inter-organizational relationship varies in terms of intensity, intent, content and emphasis. Networks act as trust-building mechanisms (Cohen et al., 2016), as enablers of collaboration (Wiles et al., 2017) and facilitating access to critical resources (Powell et al., 1999) for their members. Peer networks play a crucial role for P2P platforms (Kuhn et al., 2015), influencing the performance and building a sustainable competitive advantage (Joo et al., 2017). Through their online network features, P2P platforms facilitates direct contact between groups following similar patterns of business, selling the same type of services, having the same interests or learning the same aspects of conducting business. Being a member of such networks provide opportunities for these groups, influencing their overall performance.

However, each network may have its own rules and regulations. Usually P2P platforms are seeking profit, placing a lot of strains for their members in terms of pricing, costs, level of services. Membership of a property in various networks may alter its sustainability due to the fact that customers are sensitive on prices and discounts, making the host more sensitive on these aspects than on societal and environmental add-ons.

Therefore, we hypothesize that:

H2. *Network membership negatively influences Sustainable consumption behaviours.*

2.3. Reputation

Reputation represents public opinion assessment regarding the honesty ensured during service delivery in online transactions (Doney et al., 1997). It determines the security in P2P platforms (Pera et al., 2016), enhancing the trust between clients and service providers (Cheema, 2008), facilitating a cooperative relationship among all actors involved (Kozlenkova et al., 2017). Moreover, reputation mitigates the risks associated with online transactions (Sun, 2014) and reduces associated costs (Ye et al., 2014). Various studies have shown that reputation significantly increased credibility, making the customers more willing to pay a value premium (Ba et al., 2002). Therefore, we hypothesize that:

H3. *Services portfolio complexity has a positive effect on Sustainable consumption behaviours when Reputation is high.*

H4. *Network membership has a negative effect on Sustainable consumption behaviours when Reputation is low.*

2.4. Innovative practices

Innovativeness in business practices is represented by innovations in services offered (Tussyadiah et al., 2017), innovation in internal operations (Trudel et al., 2016; Ceptureanu et al., 2019), and innovation in customer-related practices. Innovation is an important source of value creation (Amit et al., 2001). Innovative practices of various types support operational, tactical and strategic tasks of businesses (Leary et al., 2014). The survival and growth of organizations depends upon their capacity to improve their offering to the world by product, service or process innovations (McKelvie et al., 2010). Innovative business practices often become critical sources of competitive advantage (Trudel et al., 2016).

On P2P platforms, innovation brings ventures into the limelight and rewards firms through increased sales. Innovativeness within firms (the ability to carry out innovative practices successfully) leads to greater organizational performance (McKelvie et al., 2010). Innovative practices in areas such as shipping, processing, service improvements, changes in lines of service portfolio, communication with customers and interactions with potential customers, will help improve multiple aspects of the business that affect performance. Thus, we hypothesize that:

H5. *Services portfolio complexity has a positive influence on Sustainable consumption behaviours when Innovative practices are high.*

H6. *Network membership has a negative influence on Sustainable consumption behaviours when Innovative practices are low.*

2.5. The performance of P2P platform

In online communication, it is easy to spot the relevant characteristics of product or service the customer seeks to purchase (Ye et al., 2014). In P2P accommodation platforms, this is particularly important since it is followed by recurrent bookings. Focus on environmental sustainability signals that the property is environmental-friendly, thereby enhancing the clients' willingness to pay a premium (Emekter et al., 2015), particularly for groups that hold pro-environmental beliefs. Since the profiles of various properties/hosts were very diverse, we used as an indicator of P2P platform the number of bookings and not the sales.

Thus, we hypothesize that:

H7. *Sustainable consumption behaviours positively influence P2P platform performance.*

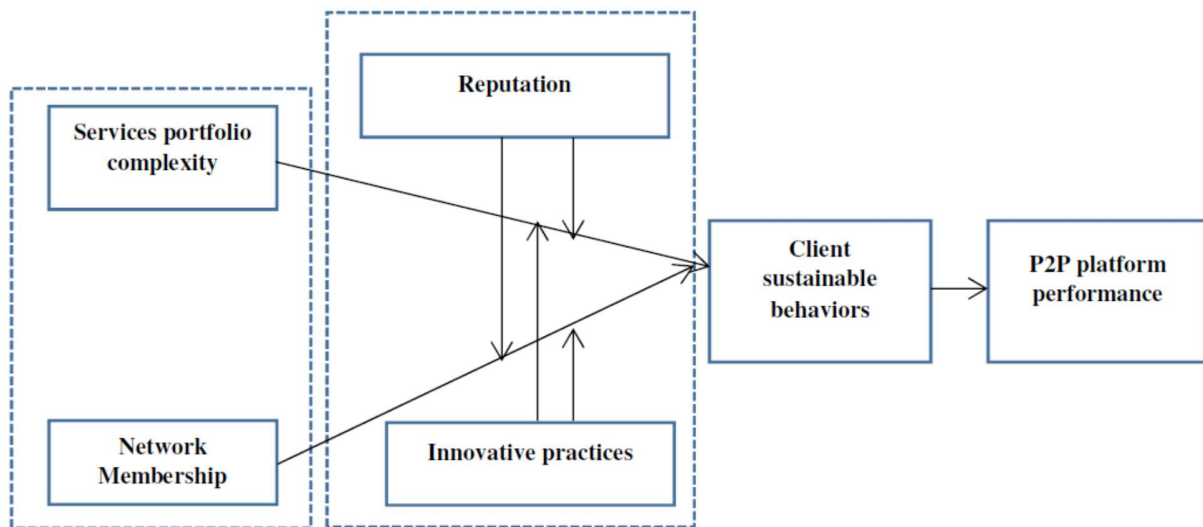


Figure 1: Research model.

3. Variables and results

3.1. Variables

Independent variables

- a) *Service portfolio complexity* (SPC) variable describes the assortment of services offered by the property. It was measured by the number of essential services provided by the property compared to an index of the P2P accommodation platform.
- b) *Network membership* (NM) variable represents the affiliation of the property to various networks.
- c) *Reputation* (R) variable reflects the level of service honesty during online transactions of the property on the P2P platform. It was measured by the platform, using an internal algorithm.
- d) *Innovation practices* (IP) variable represents the percentage of new services introduced by the property for prospective customers compared to the current services portfolio.

Control variables

- a) *Property quality* (PQ) describes whether the listed property is certified by the Romanian authorities as an accommodation service provider. It was declared by each property on the P2P platform.
- b) *Property reliability* (PR) variable describes whether the listed property has the same characteristics as described on the P2P platform.
- c) *Property size* (PS) variable describes the space of the guest house.
- d) *Property location* (PL) variable describes the location of the property, if it is located downtown or not.
- e) *Property capacity* (PC) variable describes the number of clients that the property can hold. It was measured by the maximum number of clients that the property can accommodate simultaneously.

Dependent variables

a) *P2P platform performance (PERF)* variable represents the total bookings received by the property by using the P2P platform.

b) *Sustainable consumption behaviors (SCB)* variable describes clients' voluntary behaviors to support sustainability, reflecting their environmental concerns during their accommodation. In the paper, it was measured by the incidents of phrases including cleanliness, tidiness and orderliness mentioned in the property replies to customers.

3.2. Results

OLS regression was used to test research hypothesis. Model 1 presents the results only with the control variables (*Property quality, Property reliability, Property size, Property location, Property capacity*). All control variables proved significant. Model 2 adds the independent variables - *Services portfolio complexity, Network membership, Reputation and Innovation practices*. We determined that *Services portfolio complexity* positively influences *Sustainable consumption behaviors* ($\beta = 0.062, p < 0.01$), while *Network membership* has a negative effect ($\beta = -0.139, p < 0.01$).

Table 1: Descriptive statistics and correlation.

Variable	Mean	SD	Min	Max												
PERF	3.685	1.90	.000	7.78	1											
SCB	0.511	0.74	0.00	2.98	0.42	1										
SPC	3.442	2.22	0.00	4.99	0.77	0.38	1									
NM	5.932	0.74	3.96	8.96	0.24	0.14	0.23	1								
R	4.060	3.19	0.00	6.73	0.29	0.18	0.29	0.13	1							
IP	0.891	0.20	0.00	1.00	0.38	0.19	0.38	0.09	0.20	1						
PQ	0.241	0.42	0.00	1.00	0.36	0.37	0.32	0.02	0.18	0.19	1					
PR	0.128	0.33	0.00	1.00	0.30	0.27	0.24	0.01	0.19	0.13	0.34	1				
PS	3.901	0.91	1.60	8.80	0.20	0.08	0.17	0.60	0.08	0.06	0.05	0.00	1			
PL	0.496	0.49	0.00	1.00	0.42	0.28	0.34	0.05	0.19	0.17	0.34	0.28	0.18	1		
PC	1.421	0.43	0.68	2.39	0.22	0.09	0.18	0.58	0.10	0.05	0.05	0.03	0.78	0.18	1	

Note: Significant at the 0.05 level if the absolute value of the coefficient is above 0.04.

Table 2: Regression results.

Variables	SCB			PERF	
	Model 1	Model 2	Model 3	Model 4	Model 5
Main effects					
SCB				0.594**	(0.040)
SPC		0.062**	0.062**		
		(0.003)	(0.003)		
NM		-0.139**	-0.151**		
		(0.020)	(0.020)		
R		0.001	0.002		
		(0.002)	(0.002)		
IP		0.041	0.414**		
		(0.059)	(0.147)		

Interaction effects					
SPC x R			0.002*		
			(0.001)		
NM x R			-0.008*		
			(0.005)		
SPC x IP			0.113*		
			(0.041)		
NM x IP			-0.028		
			(0.058)		
Control variables					
PQ	0.408**	0.335**	0.320**	0.697**	0.451**
	(0.031)	(0.030)	(0.030)	(0.074)	(0.075)
PR	-0.047*	0.012	0.018	-0.164**	-0.137**
	(0.020)	(0.020)	(0.020)	(0.048)	(0.046)
PS	0.258**	0.201**	0.188**	0.751**	0.598**
	(0.038)	(0.037)	(0.037)	(0.093)	(0.090)
PL	0.178**	0.124**	0.130**	0.970**	0.863**
	(0.025)	(0.025)	(0.025)	(0.063)	(0.062)
PC	-0.104*	-0.006	-0.017	-0.716**	-0.652**
	(0.044)	(0.043)	(0.043)	(0.106)	(0.102)
Constant	0.034	0.318**	0.044	2.894**	2.871**
	(0.071)	(0.114)	(0.163)	(0.173)	(0.166)
Observations	2556	2556	2556	2556	2556
R-squared	0.203	0.258	0.261	0.303	0.344

Note: Standard errors are in parentheses. ** $p < 0.01$ and * $p < 0.05$.

Model 3 includes the interaction effects. We established that *Reputation* directly influences the relation between *Services portfolio complexity* and *Sustainable consumption behaviors* ($\beta = 0.002$, $p < 0.05$). *Reputation* negatively moderates the effect of *Network membership* on *Sustainable consumption behaviors* ($\beta = -0.008$, $p < 0.05$). It was also found that *Innovative practices* directly influenced the relation between *Services portfolio complexity* and *Sustainable consumption behaviors* ($\beta = 0.113$, $p < 0.05$), but had no significant moderating effects on the relation between *Innovation practices* and *Sustainable consumption behaviors*. In addition, to test the impact of *Sustainable consumption behaviors* on *P2P platform performance*, Model 4 introduce the control variables. Model 5 included all the variables and the main effect. We found out that *Sustainable consumption behaviors* positively influence *P2P platform performance* ($\beta = 0.594$, $p < 0.01$).

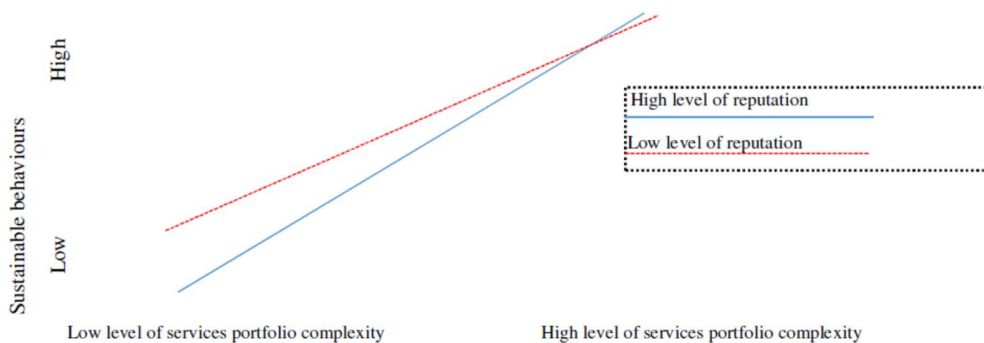


Figure 2: The moderating effect of *Reputation* on the relation between *Services portfolio complexity* and *SCB*

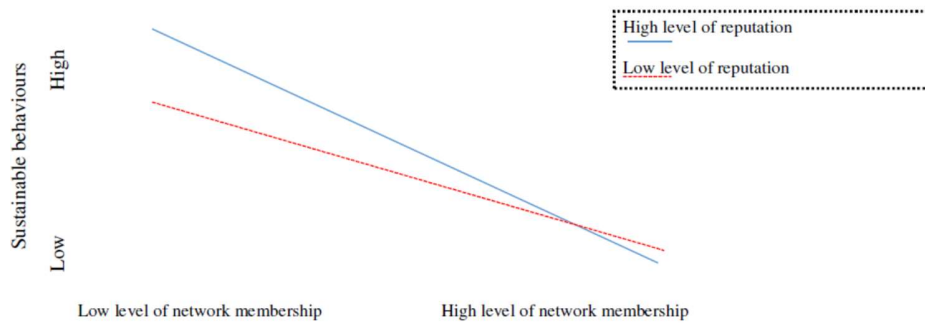


Figure 3: The moderating effect on *Reputation* on the relation between *Network membership* and *SCB*

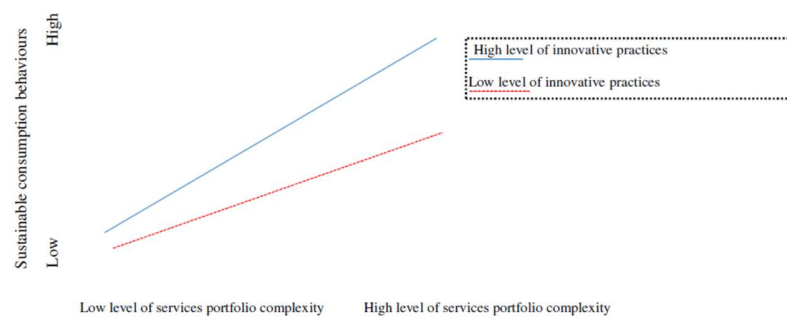


Figure 4: The moderating effect of *Innovative practice* on the relationship between *Service portfolio complexity* and *SCB*

Table 3. Summary of hypothesis

Hypothesis	Status
H1. Services portfolio complexity positively influences Sustainable consumption behaviours.	Supported
H2. Network membership negatively influences Sustainable consumption behaviours.	Supported
H3. Services portfolio complexity has a positive effect on Sustainable consumption behaviours when Reputation is high.	Supported
H4. Network membership has a negative effect on Sustainable consumption behaviours when Reputation is low.	Not supported
H5. Services portfolio complexity has a positive influence on Sustainable consumption behaviours when Innovative practices are high.	Supported
H6. Network membership has a negative influence on Sustainable consumption behaviours when Innovative practices are low.	Not supported
H7. Sustainable consumption behaviours positively influence P2P platform performance.	Supported

4. Discussion and conclusions

This research demonstrates the need to increase specific *Sustainable consumption behaviours* in accommodation industry, by shifting or at least increasing sustainable oriented behaviors between the providers of accommodation services and their customers (Cohen et al., 2016).

In our study, we found that *Services portfolio complexity* positively influences *Sustainable consumption behaviours*, while *Network membership* has a negative influence. *Services portfolio*

complexity has a positive influence on *Sustainable consumption behaviours* when *Innovative practices* are high. Finally, *Sustainable consumption behaviours* positively influence *P2P platform performance*.

Not all research hypotheses were confirmed. It seems that *Network membership* does not have a negative effect on *Sustainable consumption behaviours* when *Reputation* is low, while *Network membership* has a positive and not negative influence on *Sustainable consumption behaviours* when *Innovative practices* are low.

The results have several implications. First, the study complements other studies on *Sustainable consumption behaviours* by exploring specific sustainable practices in P2P platforms. Prior studies empirically emphasized the importance of specific *Sustainable consumption behaviors* in traditional economy, while others consider the sharing economy is a more suitable context for these behaviours (Martin, 2016). Therefore, we empirically explored the specific *Sustainable consumption behaviours* in the context of sharing economy, by focusing on a P2P platform. These platforms have a tremendous potential to enable strong connections between various economic actors when it comes to the sharing economy (Ye et al., 2017; Popescu et al., 2018).

Secondly, for those involved in the hospitality industry, mainly lodging and booking services, including in their business model access to a P2P platform may be a way to increase number of prospective customers and even develop new segments, namely customers with pro-environmental beliefs. This is particularly true for bed and breakfast, vacation rentals or guest houses.

Compliance with Ethical Standards:

Authors declare that they have no conflict of interest.

This article does not contain any studies with human participants or animals performed by any of the authors.

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