



# What makes a sustainable business model successful? An empirical comparison of two peer-to-peer goods-sharing platforms



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## ABSTRACT

Sustainable business models are intended to create economic value while benefitting the environment and society. Their wider adoption and diffusion is necessary to tackle pressing societal problems. How they are implemented and what determines their success (or lack thereof) in the market is not yet well understood, however, and deserves further exploration. To help fill the gap in knowledge, this study examines an emerging and innovative type of sustainable business model based on the peer-to-peer (P2P) sharing of underutilised assets facilitated by digital platforms. Its aim is to identify possible reasons for their commercial success or failure. In particular, the study investigates the values of users of a successful P2P goods-sharing platform and to what extent they differ from values of users of a comparable, yet unsuccessful, platform. Previous research on a UK-based online marketplace, Ecomodo, measured people's motivations for joining and the value priorities of users using Schwartz's Portrait Value Questionnaire. Results were compared with data from a representative sample of the UK population and used to explain the platform's low market uptake. The same study is here replicated with members of Peerby, an online marketplace where people rent, lend and borrow their possessions with each other. The analysis shows similar value priorities and orientation in Ecomodo and Peerby respondents, which suggests that the failure of the former platform and the success of the latter may be more directly attributed to differences in their business model design and execution than the types of user.

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## 1. Introduction

Increasing levels of energy demand and resource use in industrial economies have exerted growing pressure on the environment and exposed the limits of traditional production and consumption patterns (European Commission, 2011; Krausmann et al., 2009). Sustaining economic activities while simultaneously addressing environmental (e.g. natural resource security, climate change) and social (e.g. social justice, community development) challenges requires radical and systemic changes in business practices that eco-innovation and eco-efficiency solutions alone are unable to attain (Bocken and Short, 2016; Bocken et al., 2014; Boons et al., 2013).

Sustainable business models have the potential to generate competitive advantage for firms as well as deliver environmental

and social benefits, thereby being instrumental to accelerate the necessary transition (Arevalo et al., 2011; Bocken and Short, 2016; Bocken et al., 2014, 2015; Boons and Lüdeke-Freund, 2013; Boons et al., 2013; Lüdeke-Freund, 2009).

### 1.1. Sustainable business models

A sustainable business model creates, delivers and captures (i.e. monetises) value that benefits the company and its stakeholders (e.g. investors, customers, suppliers), in concert with the environment and society (Boons et al., 2013; Lüdeke-Freund, 2010). It does so by aligning interests of all stakeholder groups and explicitly considering the environment and society as key stakeholders (Bocken et al., 2014, 2015; Stubbs and Cocklin, 2008). Sustainable business models also dovetail with Porter and Kramer's (2011: 66) concept of creating 'shared value' through "policies and operating practices that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in

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the communities in which it operates.”

Building on academic literature and industrial practices, [Bocken et al. \(2014\)](#) identified eight sustainable business model archetypes ([Table 1](#)). According to the authors, the archetypes are not mutually exclusive and sustainability benefits are often achieved only through the combination of elements from different archetypes (e.g. delivering functionality rather than ownership, while creating value from waste; adopting a stewardship role, while substituting with renewables and natural processes).

## 1.2. Research gaps and objectives

Although research on sustainable business models is growing substantially in the strategic and innovation management literature (see [Arevalo et al., 2011](#); [Boons et al., 2013](#); [Schaltegger et al., 2016](#); [Svensson and Wagner, 2011](#)), how sustainable business models function and are applied in the real world, and what determines their success (or otherwise) in the market, are not well understood ([Dentchev et al., 2016](#)).

In particular, there has been some debate on exactly how delivering social and environmental benefits could translate into economic profit and competitive advantage for the firm ([Bocken and Short, 2016](#); [Bocken et al., 2014](#); [Hall and Clark, 2003](#); [Schaltegger et al., 2012](#)). Moreover, sustainable business models are typically implemented by social enterprises operating with new, hybrid organisational forms – such as ‘benefit corporations’ (‘B Corporations’ or ‘B Corps’) – that blur the boundary between the for-profit and nonprofit sectors ([Dees and Battle Anderson, 2003](#); [Doherty et al., 2014](#)). Compared to traditional for-profit companies, social enterprises may prioritise their mission over the pursuit of growth and revenue, thus raising novel questions on the appropriate criteria for measuring success that go beyond financial profitability ([Dentchev et al., 2016](#)). Furthermore, sustainable business models yield innovative value propositions that often encounter significant barriers to entry and only limited market acceptance, which may threaten their very existence (e.g. [Anttonen et al., 2013](#); [Darvojeda et al., 2013](#); [Planing, 2017](#); [van Weelden et al., 2016](#); [Vezzoli et al., 2015](#)). Understanding how they may be successfully designed, implemented and scaled-up to provide higher impact deserves further exploration ([Dentchev et al., 2016](#)).

In order to fill these gaps in knowledge, this paper examines a new and distinctive type of sustainable business model based on the peer-to-peer (P2P) sharing of underutilised assets enabled by digital platforms. Commonly employed in the ‘sharing economy’ (see [Botsman and Rogers, 2011](#); [Chase, 2015](#); [Darvojeda et al., 2013](#); [Stokes et al., 2014](#); [Sundararajan, 2016](#)), sharing-based business models are often assumed to have positive environmental and

social effects (e.g. a more efficient use of existing resources, building social capital) as well as provide profitable business opportunities ([Frenken and Schor, 2017](#); [Heinrichs, 2013](#); [Leissman et al., 2013](#); [PwC, 2015](#)). The analysis compares Peerby – a Dutch online platform to rent, lend and borrow goods from people in the neighbourhood – with Ecomodo – a similar, albeit unsuccessful, online P2P marketplace in the UK. The aim is to draw novel insights on sharing-based business models and identify possible reasons for their success or failure in the market.

The paper is structured as follows. Section 2 provides an overview of sustainable business models in the context of the sharing economy, with a focus on P2P platforms. After considering economic performance, attainment of sustainable targets, market penetration and level and type of user engagement as possible indicators of success, market acceptance is identified as a major barrier to the development of P2P sharing platforms. Section 3 describes the methodology of the study, based on the empirical comparison of Peerby and Ecomodo. Building on previous research on consumers’ values in relation to the acceptance of sharing-based business models, value priorities and orientation of Peerby users are analysed against those of the Dutch population and Ecomodo users in Section 4. Section 5 discusses the main findings and elaborates on how Peerby’s business model design and execution played a pivotal role in stimulating adoption and driving its market success. Section 6 draws conclusions, considers the limitations of the study and identifies possible areas for future research.

## 2. P2P sharing platforms

This section examines P2P platforms operating in the sharing economy space, such as accommodation site Airbnb and ride sharing platform BlaBlaCar. Although P2P sharing platforms typically promise to contribute to social and environmental sustainability by using idle resources more efficiently, promoting social equality and improving community cohesion, they significantly differ in their business ethos (e.g. commercial vs not-for-profit orientation), type of interaction (e.g. B2B, B2C or P2P), sector and scale of operation. A few P2P sharing platforms (e.g. Airbnb, TransferWise) have become ‘unicorns’ – start-up companies valued at \$1 billion dollars or more – but most strive to reach sufficient critical mass to thrive and many fail to translate into financially viable businesses and shut down (e.g. Cup of Teach, Share Some Sugar, OhSoWe). Market acceptance is a major barrier to the large-scale uptake of these innovative value propositions that often require (and rely on) a fundamental change in consumer behaviour ([Darvojeda et al., 2013](#); [Vezzoli et al., 2015](#)).

**Table 1**  
[Bocken et al. \(2014\)](#) sustainable business model archetypes.

Sustainable business model archetype	Definition
Maximise material productivity and energy efficiency Create value from waste	Do more with fewer resources, generating less waste, emissions and pollution The concept of ‘waste’ is eliminated by turning waste streams into useful and valuable input to other production and making better use of under-utilised capacity
Substitute with renewables and natural processes Deliver functionality rather than ownership	Reduce environmental impacts and increase business resilience by addressing resource constraints ‘limits to growth’ associated with non-renewable resources and current production systems Provide services that satisfy users’ needs without having to own physical products
Adopt a stewardship role Encourage sufficiency	Proactively engaging with all stakeholders to ensure their long-term health and well-being Solutions that actively seek to reduce consumption and production
Re-purpose the business for society/environment Develop scale-up solutions	Prioritising delivery of social and environmental benefits rather than economic profit maximisation, through close integration between the firm and local communities and other stakeholder groups Delivering sustainable solutions at a large scale to maximise benefits for society and the environment

## 2.1. The sharing economy and the P2P economy

In recent years, the rise of the sharing economy has attracted increasing attention of academics, policy-makers and the media for its potential to change production and consumption patterns in order to deliver economic, social and environmental benefits (Codagnone and Martens, 2016; Martin, 2016). The term sharing economy has been adopted to describe a socio-economic ecosystem built around the *sharing* of underutilised assets – space, skills, goods or time – for monetary or non-monetary benefits, typically facilitated by digital technologies (Botsman, 2013, 2015).

The word *sharing* is, however, a misnomer; it is used as “a floating signifier” (Nadeem et al., 2015: 13) that incorporates (and somehow conflates) renting, lending, bartering, swapping, trading and gifting practices. The semantic and conceptual ambiguity of the sharing economy label has led to a wide range of activities being grouped under its banner and ignited debate over what should, or should not, be considered as part of this space (e.g. Belk, 2014a, 2014b; Botsman, 2013; Codagnone et al., 2016; Eckhardt and Bardhi, 2015; Frenken and Schor, 2017; Nadeem et al., 2015; Stokes et al., 2014). According to Martin (2016), it is possible to identify four main sectors within the sharing economy: ‘accommodation sharing platforms’ (e.g. Airbnb, Couchsurfing); ‘car and ride sharing platforms’ (e.g. Zipcar, Uber); ‘peer-to-peer employment markets’ (e.g. TaskRabbit, PeoplePerHour) and ‘peer-to-peer platforms for sharing and circulating resources’ (e.g. Freecycle, Peerby, eBay).

Most of these sharing platforms entail P2P exchanges, thus falling under the remit of the ‘P2P Economy’. The latter refers to a subset of sharing economy activities in which assets are owned and directly exchanged between individuals (as opposed to B2C transactions, like in the case of Zipcar), who either perform the role of suppliers (providers, sellers) or consumers (buyers). The P2P coordination of the use of assets generally takes place in online marketplaces that facilitate the matching of needs (i.e. demand) and haves (i.e. supply) (Botsman, 2015; Nadeem et al., 2015). Drawing on insights from the strategic management literature, the next section examines the business model arrangements behind P2P sharing platforms.

## 2.2. Sharing-based business models

P2P sharing platforms such as Airbnb, Uber, TaskRabbit and Peerby are ‘multisided platforms’: intermediaries that bring together two (or more) distinct groups of users (e.g. hosts and guests, drivers and riders) and enable their direct interaction (Cusumano, 2015; Eisenmann et al., 2006; Evans and Schmalensee, 2016a, 2016b; Hagiu and Wright, 2015; Henten and Windekilde, 2016; Zhu and Furr, 2016). The triadic business model, involving a platform operator and two customer groups, the suppliers and consumers of the service, of these two-sided markets (Fig. 1) has been variously referred to as ‘sharing-based’ (Denning, 2014), ‘accessibility based’ (Darvojedja et al., 2013), ‘sharing-platform operator’ (Kortmann and Piller, 2016), ‘network orchestrators’ (Libert et al., 2014) or ‘market-matchmaking’ (Baden-Fuller et al., 2016) business models.

In contrast with traditional, single-sided businesses that sell their products or services to one group of customers and aim at maximising profits, multisided platforms that facilitate transactions between suppliers (‘Side 1’ in Fig. 1) and consumers (‘Side 2’ in Fig. 1) typically have low capital and operating costs, higher valuations relative to their revenue and faster growth (Eisenmann et al., 2006; Hagiu and Rothman, 2016; Hagiu and Wright, 2013; Libert et al., 2014; van Alstyne et al., 2016). Many of these

benefits derive from platform dynamics and network effects. That is, the platform’s value to any given user increases with the addition of another participant on the same side (i.e. direct network effect) and/or with the addition of another participant on the other side of the platform (i.e. indirect network effect)<sup>1</sup> (Eisenmann et al., 2006; Evans and Schmalensee, 2016a). For example, every new host (supplier) on Airbnb makes the platform more appealing to prospective guests (consumers), thus also enhancing the overall value of the platforms for fellow hosts. Positive network effects lead to positive feedback loops: the more drivers offer a ride on BlaBlaCar, the more people looking for a ride use the service, the more rides are made available, the more passengers join in, and so on. When positive network effects are at work, platforms can experience exponential growth and ‘winner-takes-all’ advantages, albeit those are not necessarily durable (Eisenmann et al., 2006; Evans and Schmalensee, 2016b; Hagiu and Rothman, 2016).

The explosive growth of some P2P sharing platforms has followed a similar path, powered by digital technologies (particularly the Internet and smartphone apps) that make platforms building and scaling up simpler, cheaper and more effective (Evans and Schmalensee, 2016a; van Alstyne et al., 2016). The advent of these sharing economy start-ups on the market has disrupted established industries and incumbents, while their billion-dollar valuations have sparked the interest of entrepreneurs and investors (Cusumano, 2015; Hagiu and Rothman, 2016). Nevertheless, as the collapse of many other P2P sharing platforms demonstrates, building a successful online marketplace is not an easy task (Eisenmann et al., 2006; Evans and Schmalensee, 2016a; Hagiu and Rothman, 2016).

In order to achieve commercial success, platform operators have to identify a significant ‘market friction’ (i.e. transaction costs or other impediments that prevent two or more different types of customers to get together and directly interact with each other) that they want to reduce (Evans and Schmalensee, 2016a). This should create and deliver sufficient value for people to start using the platform. The platform has then to build up a critical mass of users. In two-sided markets this means attracting potential suppliers and consumers. Bringing both sides on board is often described as a ‘chicken-and-egg’ problem: to attain a critical mass of consumers the platform needs a critical mass of suppliers, but to recruit enough suppliers, the platform needs a large enough pool of consumers (Hagiu and Rothman, 2016; Hagiu and Wright, 2013). Pricing decisions – choosing how much to charge each side of the market – are a key mechanism to attract participants and ensure profitability in the long run (Evans and Schmalensee, 2016a; Rochet and Tirole, 2003). However, the success of an online marketplace is not guaranteed even when the latter has attracted a critical mass of suppliers and consumers. Platforms operate within broader ecosystems of firms, governments and other institutions. As such, they have also to cope with competition of rival platforms as well as possible legal and regulatory hurdles (Cusumano, 2015; Evans and Schmalensee, 2016a; Hagiu and Rothman, 2016). Lastly, the platform design has to create sufficient levels of trust between participants, whose interactions require some form of governance aimed at encouraging desired actions between consumers and suppliers, while controlling user activity that may prove detrimental to the platform (Evans and Schmalensee, 2016a; Hagiu and Rothman, 2016; van Alstyne et al., 2016).

Identifying a significant market friction, building a critical mass

<sup>1</sup> Direct and indirect network effects can also be negative. For example, additional users can make other participants of the same group worse off because of increasing congestion or competition on the platform (Evans and Schmalensee, 2016a).

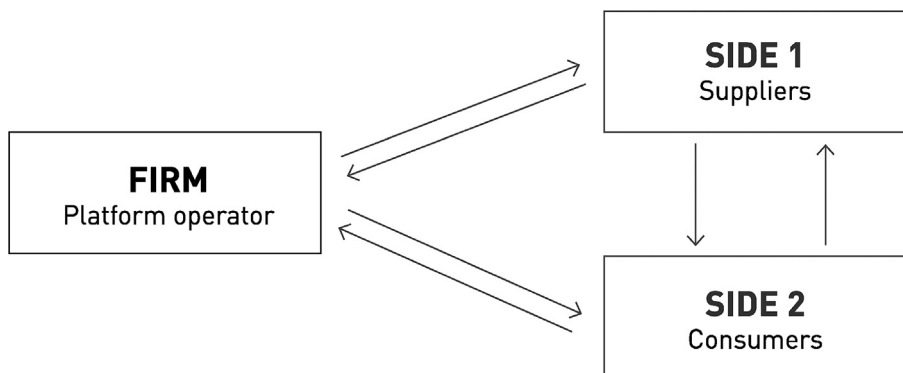


Fig. 1. Two-sided market.

of users, getting the pricing level and structure right, addressing competition and regulatory hurdles, and fostering trust and positive consumer-supplier interactions are all preconditions for creating economically viable and profitable multisided platforms. However, when P2P sharing platforms see sustainability as an important part of the business mission, their success cannot be adequately measured in terms of economic returns and valuations.

Arguably, all P2P sharing platforms have a sustainable business model at their core, in that they variously embed Bocken et al.'s (2014) archetypes (e.g. 'maximise material productivity and energy efficiency'; 'create value from 'waste''; 'deliver functionality, rather than ownership'; 'encourage sufficiency'; 're-purpose the business for society/environment'; 'develop scale up solutions') (Table 1). However, only few of them measure environmental and social impact alongside their financial return (Codagnone et al., 2016), while some decide to operate as non-commercial platforms, thus prioritising the attainment of environmental and social goals over financial growth.

Obtaining a 'B Corp certification'<sup>2</sup> is one way by which for-profit companies whose primary purpose is social impact can demonstrate how they meet verified standards of social and environmental performance, public transparency and legal accountability (Fig. 2). Conceivably, success metrics for sharing-based business models should include financial performance, market penetration and level and type of user engagement alongside social and environmental impact. That would mean measuring the latter two more systematically, as some for-profit P2P sharing platforms have already started to do (e.g. goods-sharing platform Peerby and skills-sharing platform Crocquer have B Corp certification).

2.3. Market acceptance of sharing-based business models

Securing enough participants on each side of the marketplace, and in the right proportions, is fundamental for multisided platforms to reach a critical mass of users able to trigger the network effects described earlier and grow effectively. According to Evans and Schmalensee (2016a), creating a compelling value proposition (which is typically set to reduce existing transaction costs) is what ensures customers are attracted to the platform in the first place. However, the value proposition of sustainable business models based on the sharing of underutilised assets often challenges entrenched consumer behaviour and underlying habits. As such, P2P sharing platforms can find consumer-related barriers to acceptance and adoption that slow down their market penetration

<sup>2</sup> The B Corp certification is a voluntary, private certification issued by the nonprofit organisation B Lab.

B Impact Report		
Certified since: April 2015		
Summary:	Company Score	Median Score*
Environment	23	7
Workers	28	18
Customers	N/A	N/A
Community	38	17
Governance	11	6
Overall B Score	99	55

80 out of 200 is eligible for certification  
 \*Of all businesses that have completed the B Impact Assessment  
 \*Median scores will not add up to overall

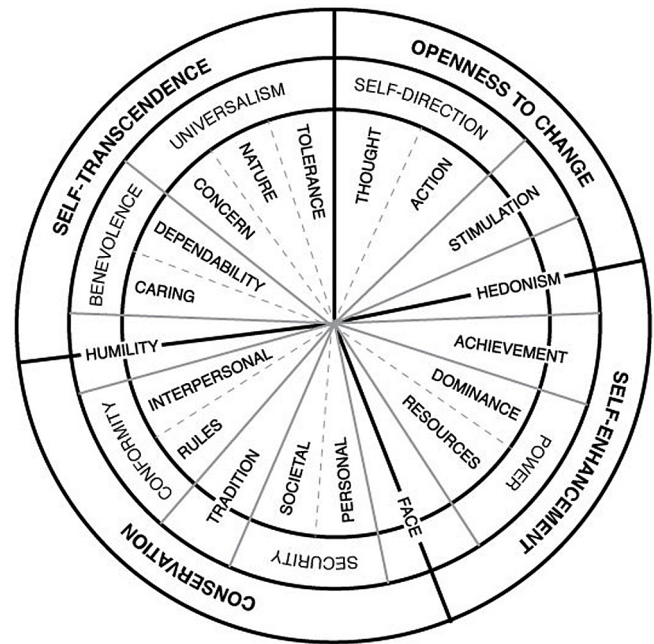
Fig. 2. Peerby's 'B impact report' (<https://www.bcorporation.net/community/peerby>).

and may even cause their failure (see also Antikainen et al., 2015; Bocken and Short, 2016; Darvojedja et al., 2013; Hirschl et al., 2003; Planing, 2017).

Previous research has investigated the role of consumers' values in facilitating (or hindering) participation in P2P platforms for sharing and circulating resources (e.g. Martin and Upham, 2015; Piscicelli et al., 2015). These empirical studies have used Schwartz and colleagues' value theory (Schwartz, 1992, 1994; Schwartz et al., 2012) that identifies 10 and, in a more recent and fine-tuned version, 19 basic individual values (Table 2) as "trans-situational goals, varying in importance, that serve as guiding principles in the life of a person or group" (Schwartz et al., 2012: 664). The 19 basic individual values are organised in a 'motivational continuum' (Fig. 3) and grouped in four higher order values based on the compatibility and similarity of the type of motivational goal they express. 'Openness to change' values that emphasise readiness for

**Table 2**  
Conceptual definitions of Schwartz et al.'s (2012) 19 basic individual values according to their motivational goals.

Value	Conceptual definitions in terms of motivational goals
Self-direction-thought	Freedom to cultivate one's own ideas and abilities
Self-direction-action	Freedom to determine one's own actions
Stimulation	Excitement, novelty, and change
Hedonism	Pleasure and sensuous gratification
Achievement	Success according to social standards
Power-dominance	Power through exercising control over people
Power-resources	Power through control of material and social resources
Face	Security and power through maintaining one's public image and avoiding humiliation
Security-personal	Safety in one's immediate environment
Security-societal	Safety and stability in the wider society
Tradition	Maintaining and preserving cultural, family, or religious traditions
Conformity-rules	Compliance with rules, laws, and formal obligations
Conformity-interpersonal	Avoidance of upsetting or harming other people
Humility	Recognizing one's insignificance in the larger scheme of things
Benevolence-dependability	Being a reliable and trustworthy member of the ingroup
Benevolence-caring	Devotion of the welfare of ingroup members
Universalism-concern	Commitment to equality, justice, and protection for all people
Universalism-nature	Preservation of the natural environment
Universalism-tolerance	Acceptance and understanding of those who are different from oneself



**Fig. 3.** Circular motivational continuum of Schwartz et al.'s (2012) 19 basic individual values. Adapted from Schwartz et al. (2012).

new ideas, actions and experiences are contrasted with 'conservation' values that emphasise self-restriction, order and avoiding change. 'Self-enhancement' values that emphasise pursuing one's own interests are diametrically opposed to 'self-transcendence' values that emphasise transcending one's own interests for the sake of others (Schwartz et al., 2012).<sup>3</sup>

Piscicelli et al. (2015) found that users of UK-based goods-sharing platform Ecomodo prioritised self-transcendence and openness to change values – which typically drive pro-social and pro-environmental behaviour – over self-enhancement and conservation values. In particular, Ecomodo members attributed significantly lower importance to tradition, security and power values compared to the UK population. The difference in value orientation between Ecomodo users and the UK population was considered partly responsible for the limited market acceptance and adoption of the platform. Martin and Upham's (2015) large-scale survey of members of thriving free reuse platform Freegle showed that only a third of respondents prioritised self-transcendence and openness to change values (i.e. a value orientation consistent with that of Ecomodo users) and ascribed the wide uptake of Freegle in the market to its appeal to a large audience, endorsing diverse sets of value priorities and orientations.

The two studies offer some indication of the existing relationship between consumers' values and market acceptance and adoption of sharing-based business models. However, their results cannot be directly used to infer what makes one P2P platform for sharing and circulating resources more successful than another, as different dynamics are at work in the case of Freegle, which enables gifting and receiving of items no longer wanted, and Ecomodo, which facilitates renting, lending and borrowing of goods.

<sup>3</sup> There are also some values that share elements of different higher order values. 'Hedonism' shares elements of both openness to change and self-enhancement values; 'face' shares elements of both self-enhancement and conservation values; 'humility' shares elements of both conservation and self-transcendence values (Schwartz et al., 2012).

Moreover, as both studies focussed on UK-based P2P platforms further research is needed to ascertain whether the results hold true for comparable platforms operating in other countries.

### 3. Methodology

The previous section identified the main mechanisms to develop a successful P2P sharing platform (Section 2.2), while market uptake was described as a key challenge for sharing-based business models despite being necessary to achieve growth and scalability (Section 2.3). In particular, market acceptance (or lack thereof) was deemed somewhat related to consumers' values. The failure of goods-sharing platform Ecomodo, for example, was partly attributed by Piscicelli et al. (2015) to its appeal to a small portion of the UK population holding a specific value orientation (i.e. prioritising self-transcendence and openness to change values). Building on Martin and Upham's (2015) findings, it is conceivable that users of a successful P2P goods-sharing platform have a somehow different value orientation from the one detected in Ecomodo users (i.e. a value orientation more similar to the population at large). To explore this possibility, the following research question was developed:

Q1: How does the value orientation of users of a successful P2P goods-sharing platform differ from that of users of a comparable, yet unsuccessful, platform?

If no significant differences in value orientation exist, reasons for success are likely to rely on the specific characteristics of the platform, such as its business model design (i.e. the articulation of anticipated value creation and value capture dynamics by the firm) and execution.

#### 3.1. Case study research design

In order to examine consumers' values in relation to the market success (or failure) of a P2P goods-sharing platform and its underlying business model, a case study approach was adopted. Case studies are well-suited to investigate contemporary phenomena in

depth and within their real-life context over which the researcher has little or no control (Yin, 2014). A multiple-case design – case study research in which more than one case is selected to develop a more robust understanding of the issue under examination than a single case can provide – was chosen using two distinct P2P goods-sharing platforms, a successful and an unsuccessful one, as units of analysis. A ‘two-case’ explanatory case study was considered appropriate to draw comparisons between ‘extreme cases’ and address how and why two similar platforms had contrasting market responses (see also Yin, 2012).

Although empirical case studies typically provide an inadequate basis for statistical generalisation, their findings are amenable to analytic generalisation based on corroborating, modifying, rejecting or advancing theoretical concepts that guide the initial design of a study, or new concepts that may emerge upon its completion (Flyvbjerg, 2006; Ritchie et al., 2014; Yin, 2014). As such, the research that informs this paper is meant to shed empirical light about theoretical concepts and principles that go beyond the specific cases analysed and may potentially apply to a variety of other, similar situations (Yin, 2014).

### 3.1.1. Case selection: Peerby vs Ecomodo

While previous research on Ecomodo made it a well-documented case of unsuccessful P2P marketplace for renting, lending and borrowing underutilised assets (Piscicelli et al., 2015), Dutch platform Peerby was selected as a suitable counterexample for the study. Peerby is an online platform that, like Ecomodo, enables local sharing of household goods. In contrast with Ecomodo, however, Peerby is often cited in academic literature as a successful case of P2P platform for sharing and circulating resources due to its wide market penetration and proven financial viability, alongside an attested positive impact on sustainability (Fig. 2, above) (see Darvojedja et al., 2013; Martin, 2016; Böcker and Meelen, 2017). The comparison between Peerby and Ecomodo was thus specifically chosen to predict contrasting results but for anticipatable reasons (i.e. theoretical replication) (Yin, 2014), these being either differences in their users’ value orientation or the platform’s business model design and execution.

On one hand, Ecomodo was launched in March 2010 and, failing to reach a critical mass of users, shut down in March 2015. Free to join, registered users could rent, lend and borrow each other’s goods, skills and spaces through the website either without charge or for a fee set by the supplier. The latter could also decide to donate the proceeds to a charity. The platform charged a small fee for facilitating monetary transactions and a second revenue stream came from additional insurance cover against accidental loss or damage of goods that suppliers could opt for (Piscicelli, 2016).

On the other hand, Peerby was launched in September 2012 as a P2P platform enabling people to lend and borrow items from others in their neighbourhood free of charge. By 2014, Peerby already had more than 100,000 users, with active communities in over 20 cities in Europe and the United States. Its rapid growth attracted \$2.1 million venture capital and angel investment, while a secondary revenue stream was created with the introduction of the ‘Peerby Warranty’ insurance option in 2015. In the same year, a rental service for which Peerby takes a 25% commission, Peerby Go, was added to the platform. Peerby Go features a curated catalogue of products with guaranteed availability, delivery and insurance that is intended to make access as convenient as buying. This new business model was first piloted in Amsterdam and promising results were used to raise \$2.2 million over a weekend in an equity crowdfunding campaign in March 2016 to enable product development and international expansion in the UK and North America (Peerby, 2016).

Both Ecomodo and Peerby were set up as social enterprises with a central focus on making a positive economic, social and environmental impact. Benefits advertised by the two start-up companies included making and saving money (as well as time and storage space) on items only needed once or occasionally. Alongside financial gains, they promoted sharing as a way to help others and meet new people, thus increasing social connectivity and leading to safer and more thriving neighbourhoods. They also presented access over ownership as convenient, enabling people to ‘live a richer life’ without unnecessary material possessions. Finally, they promoted sharing as a means to ‘live green’ on the basis that any product that is shared helps to reduce CO<sub>2</sub> emissions, waste and resource consumption (Except Integrated Sustainability, 2015; Popp, 2012).

### 3.2. Data collection and analysis

In their study of Ecomodo, Piscicelli et al. (2015) measured motivations for joining and value priorities of 63 Ecomodo members using Schwartz’s Portrait Value Questionnaire R3 (PVQ-R3), complemented by additional demographic questions (e.g. gender, age, education). The questionnaire consists of short ‘verbal portraits’ of different people who are described in terms of particular values. Respondents are asked to indicate how similar the person described in each portrait is to them using a 6-point scale from 1 (“not like me at all”) to 6 (“very much like me”). Respondents’ values are inferred from their self-reported similarity to each portrait (Schwartz et al., 2001; Schwartz, 2012). Results of Ecomodo members were compared with data from a representative sample of the UK population and used to explore the low market uptake of the platform.

In this paper, the same study is replicated with Peerby users. Data collection was conducted through an online survey administered to registered users of Peerby between February and April 2016. A link to Schwartz’s PVQ-R3 (with demographic questions adapted for Dutch respondents) was provided in the Peerby newsletter to 110,474 subscribing members. A prize draw for two 20€ gift vouchers was used as an incentive for participation. After the dataset cleaning procedures, N = 1109 completed questionnaires were analysed with IBM SPSS Statistics v.22 software.<sup>4</sup> Data were first compared with those of a representative sample of the Dutch population (N = 1799) collected through a shorter, 21-item version, of Schwartz’s PVQ as part of the European Social Survey (ESS)<sup>5</sup> undertaken in 2014 (see European Social Survey, 2016), which is based on Schwartz’s original 10 basic individual values measured by questionnaire (PVQ-21) used for the ESS. Peerby users’ results were subsequently compared with data from the Ecomodo sample in terms of demographics, reasons for participation in P2P sharing, and individual values.

The quantitative analysis (Section 4) was finally complemented by archival data used to identify differences in the business model design and execution of Peerby and Ecomodo (Section 5).

## 4. Results

Section 4.1 first presents demographic characteristics of Peerby respondents and their stated motivation for joining the platform. It then shows their overall value orientation and how they prioritise Schwartz’s 19 basic individual values (Fig. 3, above). A comparison

<sup>4</sup> Many questionnaires were excluded from analysis because they were incomplete. The high number of questionnaires that were only partially completed may be due to the length (i.e. 57 questions) of the PVQ-R3 used in the study.

<sup>5</sup> The European Social Survey is an academically driven cross-national survey conducted every two years across Europe since 2001.

with data of a representative sample of the Dutch population is also made, to identify possible differences in value priorities and orientation. In Section 4.2 the data are examined in relation to those of Ecomodo members.

#### 4.1. Peerby

Most Peerby users who completed the survey were Dutch (75%), female (55%), middle aged (23% aged 35–44, 29% aged 45–54, 22% aged 55–65), and well-educated (81% to degree level or above). The majority of respondents were married or living as a couple (66%), and had no religion (69%). The most commonly stated reason for joining Peerby was ‘to make better use of what I already own’ (35%), followed by ‘to be green’ (28%), ‘to connect with my local community’ (14%), ‘other’ (16%), and ‘to save some money’ (7%).

In terms of value orientation, Peerby respondents scored higher in self-transcendence and openness to change values and lower in self-enhancement and conservation values (Table 3).

Aggregate scores for Schwartz's 19 basic individual values revealed that Peerby members ascribed relatively high importance to self-direction and universalism values and low importance to power and tradition values (Table 4).

The data were used to draw a comparison between Peerby members that identified themselves as ‘Dutch’ (N = 833) and the Dutch population.<sup>6</sup> The two samples had diametrically opposed value orientations: the latter scored higher in self-enhancement and conservation values, and lower in self-transcendence and openness to change values (Table 5).

Analysis of the value priorities of the two samples revealed that Peerby users assigned the highest importance to self-direction, benevolence and universalism values, and the lowest to tradition and power values. Conversely, the Dutch population sample attributed more importance to power values and less to benevolence and universalism values (Table 6).

An independent samples *t*-test was performed to verify whether the differences in values between Dutch Peerby members and the Dutch population were statistically significant. The null hypothesis for the independent samples *t*-test was that the values (means) of the two groups are equal ( $H_0: \mu_1 - \mu_2 = 0$ ). In other words, there is no statistically significant difference between them. If the significance level (*p*-value) is greater than 0.05, means can be treated as equal. Table 7 shows that the null hypothesis is rejected for all values except security, indicating statistically significant differences in values (means) between the two samples. This contradicts the initial prediction that users of a successful P2P goods-sharing platform have a value orientation that is similar to the wider population (and thus consistent with large-scale market acceptance and uptake) (Section 3). Unexpectedly, the values of Peerby users were found to differ from those of the Dutch population, just as those of Ecomodo users were found to differ from those of the UK population.

#### 4.2. Peerby and Ecomodo

The administration of Schwartz's PVQ-R3 questionnaire to both Peerby and Ecomodo members allowed for a direct comparison of data from the two groups. Demographic characteristics were similar, although there were slightly more female users in the case of Ecomodo and Ecomodo users being slightly younger and wealthier. The majority of Peerby and Ecomodo users have no

**Table 3**

Means (centred) of the four higher order values. *Note.* Mean raw scores were centred using the procedure recommended by Schwartz et al. (2012).

Value	M (c)
Self-transcendence	4.82
Openness to change	4.65
Self-enhancement	3.13
Conservation	3.64

**Table 4**

Means (centred) and standard deviations of Schwartz's 19 basic individual values.

Value	M (c)	SD
Self-direction-thought	4.95	0.65
Self-direction-action	5.00	0.66
Stimulation	3.99	0.92
Hedonism	4.34	0.76
Achievement	3.75	0.79
Power-dominance	3.14	0.87
Power-resources	2.50	0.82
Face	3.85	0.74
Security-personal	4.10	0.68
Security-societal	3.78	0.81
Tradition	2.76	0.90
Conformity-rules	3.60	1.03
Conformity-interpersonal	3.96	0.88
Humility	3.85	0.83
Benevolence-caring	4.84	0.59
Benevolence-dependability	4.85	0.56
Universalism-concern	4.95	0.72
Universalism-nature	4.62	0.89
Universalism-tolerance	4.86	0.69

**Table 5**

Compared means (centred) of the four higher order values: Peerby (Dutch respondents only) and Dutch population (NL).

Value	Peerby	NL
	M (c)	M (c)
Self-transcendence	4.79	2.23
Openness to change	4.64	2.81
Self-enhancement	3.15	3.54
Conservation	3.65	2.89

**Table 6**

Compared means (centred) and standard deviations of Schwartz's original 10 basic individual values: Peerby (Dutch respondents only) and Dutch population (NL).

Value	Peerby		NL	
	M (c)	SD	M (c)	SD
Self-direction	4.96	0.54	2.28	0.70
Stimulation	3.98	0.92	3.33	0.93
Hedonism	4.29	0.76	2.76	0.78
Achievement	3.73	0.79	3.26	0.84
Power	2.85	0.67	3.82	0.84
Security	3.93	0.58	2.71	0.78
Tradition	2.81	0.90	2.95	0.89
Conformity	3.78	0.74	3.02	0.88
Benevolence	4.82	0.47	2.18	0.62
Universalism	4.78	0.57	2.27	0.64

religion and are married or living as a couple.

The data revealed a substantial similarity in value orientation, with both samples assigning higher importance to self-transcendence and openness to change values over self-enhancement and conservation values (Table 8).

Results showed affinities in value priorities between Peerby and

<sup>6</sup> The comparison needs to be considered as indicative only since data were collected with different instruments and in different years, and thus cannot be directly compared.

**Table 7**  
Independent samples *t*-test: Peerby (Dutch respondents only) and Dutch population.

		Independent Samples Test									
		Levene's Test for Equality of Variances		<i>t</i> -test for Equality of Means							
		F	Sig.	<i>t</i>	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
										Lower	Upper
Self-direction	Equal variances assumed	42.665	0.000	52.415	2630	0.000	1.43688	0.02741	1.38312	1.49063	
	Equal variances not assumed			57.340	2035.988	0.000	1.43688	0.02506	1.38773	1.48602	
Stimulation	Equal variances assumed	0.407	0.523	-15.297	2630	0.000	-0.59244	0.03873	-0.66838	-0.51650	
	Equal variances not assumed			-15.481	1668.824	0.000	-0.59244	0.03827	-0.66750	-0.51738	
Hedonism	Equal variances assumed	1.610	0.205	9.052	2629	0.000	0.29096	0.03214	0.22793	0.35399	
	Equal variances not assumed			9.228	1699.910	0.000	0.29096	0.03153	0.22912	0.35280	
Achievement	Equal variances assumed	4.448	0.035	-22.561	2630	0.000	-0.77845	0.03450	-0.84611	-0.71079	
	Equal variances not assumed			-23.193	1736.144	0.000	-0.77845	0.03356	-0.84428	-0.71262	
Power	Equal variances assumed	42.570	0.000	-66.823	2630	0.000	-2.20800	0.03304	-2.27279	-2.14321	
	Equal variances not assumed			-72.940	2024.507	0.000	-2.20800	0.03027	-2.26737	-2.14864	
Security	Equal variances assumed	80.856	0.000	-0.930	2630	0.353	-0.02802	0.03015	-0.08714	0.03109	
	Equal variances not assumed			-1.038	2143.719	0.299	-0.02802	0.02699	-0.08096	0.02492	
Tradition	Equal variances assumed	0.137	0.711	-39.318	2630	0.000	-1.44929	0.03686	-1.52157	-1.37701	
	Equal variances not assumed			-39.204	1608.671	0.000	-1.44929	0.03697	-1.52180	-1.37678	
Conformity	Equal variances assumed	37.301	0.000	-11.681	2630	0.000	-0.41257	0.03532	-0.48183	-0.34332	
	Equal variances not assumed			-12.652	1985.007	0.000	-0.41257	0.03261	-0.47652	-0.34862	
Benevolence	Equal variances assumed	45.418	0.000	57.792	2630	0.000	1.39535	0.02414	1.34800	1.44269	
	Equal variances not assumed			64.163	2112.818	0.000	1.39535	0.02175	1.35270	1.43799	
Universalism	Equal variances assumed	7.689	0.006	48.998	2630	0.000	1.26119	0.02574	1.21071	1.31166	
	Equal variances not assumed			51.386	1827.021	0.000	1.26119	0.02454	1.21305	1.30932	

**Table 8**  
Compared means (centred) of the four higher order values: Peerby and Ecomodo.

Value	Peerby	Ecomodo
	M (c)	M (c)
Self-transcendence	4.82	4.91
Openness to change	4.65	4.25
Self-enhancement	3.13	3.51
Conservation	3.64	3.53

**Table 9**  
Compared means (centred) and standard deviations of Schwartz's 19 basic individual values: Peerby and Ecomodo.

Value	Peerby		Ecomodo	
	M (c)	SD	M (c)	SD
Self-direction-thought	4.95	0.65	5.04	0.65
Self-direction-action	5.00	0.66	4.71	0.68
Stimulation	3.99	0.92	3.82	1.04
Hedonism	4.34	0.76	4.07	0.78
Achievement	3.75	0.79	3.84	0.84
Power-dominance	3.14	0.87	2.86	0.83
Power-resources	2.50	0.82	2.37	0.90
Face	3.85	0.74	3.85	0.90
Security-personal	4.10	0.68	4.08	0.73
Security-societal	3.78	0.81	3.83	0.83
Tradition	2.76	0.90	2.98	0.91
Conformity-rules	3.60	1.03	3.39	1.08
Conformity-interpersonal	3.96	0.88	3.92	0.92
Humility	3.85	0.83	3.83	0.81
Benevolence-caring	4.84	0.59	4.91	0.73
Benevolence-dependability	4.85	0.56	4.92	0.56
Universalism-concern	4.95	0.72	5.06	0.68
Universalism-nature	4.62	0.89	4.79	0.92
Universalism-tolerance	4.86	0.69	4.87	0.72

Ecomodo users. In particular, both samples ascribed low importance to power-resources, power-dominance, tradition and conformity-rules. Peerby members scored high in self-direction-

action, self-direction-thought and universalism-concern, whereas Ecomodo users prioritised universalism-concern, self-direction-thought and benevolence-dependability (Table 9).

An independent samples *t*-test was run in order to verify the statistical significance of the differences in values (means) between Peerby and Ecomodo users. The null hypothesis was that values (means) are equal, whereas the alternative hypothesis held that there are statistically significant differences in values (means) ( $H_A: \mu_1 - \mu_2 \neq 0$ ). Results indicated that the null hypothesis is only rejected for four of the 19 basic individual values: self-direction-action, hedonism, power-dominance and tradition (Table 10). Hence, the alternative hypothesis cannot be accepted and the value priorities of the two groups should be considered largely similar, as graphically shown in Fig. 4.

Despite the similarity in value priorities and orientation between Peerby and Ecomodo users, their stated reasons for joining the two platforms were rather different (which may reflect cultural differences between the two groups). In each case, users regarded participation in P2P goods-sharing as a way to be 'green', but whereas Peerby users were more likely to regard participation as a way to make better use of what they own, Ecomodo users were more likely to regard participation as a way to connect with their local communities or to save some money (Table 11).

## 5. Discussion

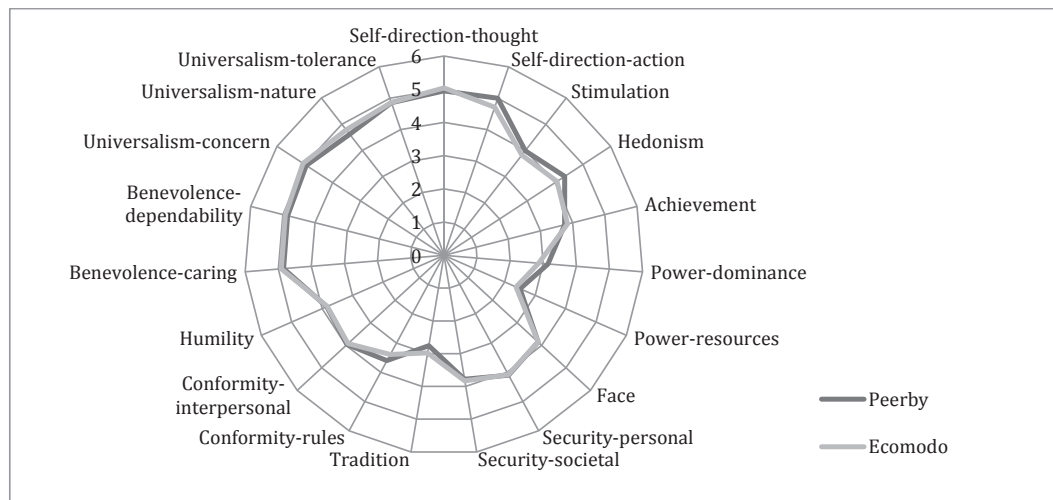
In the previous section, results of a survey of Peerby members were presented and contrasted with data from a previous survey of Ecomodo users. This section elaborates on how they provide new insights into the market acceptance of sharing-based sustainable business models in relation to consumers' values.

Given the wide market uptake of Peerby, the initial expectation was that its users had value priorities and orientation similar to those of the Dutch population, in contrast with users of the unsuccessful platform, Ecomodo, whose value priorities and



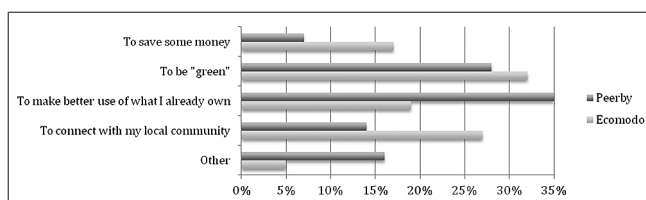
**Table 10**  
Independent samples *t*-test: Peerby and Ecomodo.

		Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
										Lower	Upper
Self-direction-thought	Equal variances assumed	0.532	0.466	-1.341	1170	0.180	-0.11231	0.08378	-0.27668	0.05206	
	Equal variances not assumed			-1.341	69.233	0.184	-0.11231	0.08377	-0.27941	0.05480	
Self-direction-action	Equal variances assumed	0.100	0.752	3.109	1170	0.002	0.26593	0.08553	0.09813	0.43373	
	Equal variances not assumed			3.038	68.857	0.003	0.26593	0.08753	0.09130	0.44056	
Stimulation	Equal variances assumed	0.899	0.343	1.180	1170	0.238	0.14190	0.12020	-0.09394	0.37773	
	Equal variances not assumed			1.059	67.639	0.293	0.14190	0.13398	-0.12549	0.40928	
Hedonism	Equal variances assumed	0.514	0.474	2.453	1170	0.014	0.24038	0.09801	0.04808	0.43268	
	Equal variances not assumed			2.369	68.680	0.021	0.24038	0.10146	0.03795	0.44280	
Achievement	Equal variances assumed	0.290	0.590	-1.182	1170	0.237	-0.12114	0.10249	-0.32222	0.07995	
	Equal variances not assumed			-1.118	68.360	0.268	-0.12114	0.10839	-0.33741	0.09514	
Power-resources	Equal variances assumed	0.572	0.450	0.954	1170	0.340	0.10236	0.10730	-0.10816	0.31288	
	Equal variances not assumed			0.883	68.052	0.381	0.10236	0.11596	-0.12904	0.33376	
Power-dominance	Equal variances assumed	0.008	0.927	2.255	1170	0.024	0.25226	0.11189	0.03273	0.47178	
	Equal variances not assumed			2.345	69.916	0.022	0.25226	0.10758	0.03769	0.46682	
Face	Equal variances assumed	5.089	0.024	-0.293	1169	0.770	-0.02850	0.09740	-0.21961	0.16261	
	Equal variances not assumed			-0.246	65.693	0.807	-0.02850	0.11601	-0.26013	0.20314	
Security-personal	Equal variances assumed	0.543	0.461	-0.129	1170	0.897	-0.01144	0.08841	-0.18490	0.16201	
	Equal variances not assumed			-0.121	68.215	0.904	-0.01144	0.09444	-0.19989	0.17700	
Security-societal	Equal variances assumed	0.042	0.839	-0.690	1170	0.490	-0.07274	0.10538	-0.27950	0.13402	
	Equal variances not assumed			-0.678	68.948	0.500	-0.07274	0.10724	-0.28668	0.14119	
Tradition	Equal variances assumed	0.082	0.775	-2.149	1170	0.032	-0.25038	0.11653	-0.47902	-0.02174	
	Equal variances not assumed			-2.135	69.124	0.036	-0.25038	0.11730	-0.48438	-0.01638	
Conformity-rules	Equal variances assumed	0.546	0.460	1.418	1170	0.157	0.18922	0.13347	-0.07265	0.45110	
	Equal variances not assumed			1.355	68.520	0.180	0.18922	0.13964	-0.08938	0.46783	
Conformity-interpersonal	Equal variances assumed	0.096	0.756	0.055	1170	0.956	0.00626	0.11410	-0.21761	0.23013	
	Equal variances not assumed			0.053	68.574	0.958	0.00626	0.11895	-0.23106	0.24357	
Humility	Equal variances assumed	0.048	0.827	-0.027	1170	0.979	-0.00286	0.10716	-0.21310	0.20738	
	Equal variances not assumed			-0.027	69.592	0.978	-0.00286	0.10491	-0.21212	0.20640	
Benevolence-dependability	Equal variances assumed	0.213	0.645	-1.372	1170	0.170	-0.09912	0.07225	-0.24088	0.04264	
	Equal variances not assumed			-1.366	69.163	0.176	-0.09912	0.07255	-0.24385	0.04561	
Benevolence-caring	Equal variances assumed	4.821	0.028	-1.241	1170	0.215	-0.09554	0.07697	-0.24656	0.05547	
	Equal variances not assumed			-1.020	66.614	0.311	-0.09554	0.09364	-0.28246	0.09138	
Universalism-concern	Equal variances assumed	0.479	0.489	-1.526	1170	0.127	-0.14177	0.09288	-0.32399	0.04046	
	Equal variances not assumed			-1.600	70.058	0.114	-0.14177	0.08861	-0.31849	0.03496	
Universalism-nature	Equal variances assumed	0.198	0.656	-1.802	1170	0.072	-0.20766	0.11522	-0.43373	0.01840	
	Equal variances not assumed			-1.743	68.701	0.086	-0.20766	0.11911	-0.44530	0.02997	
Universalism-tolerance	Equal variances assumed	0.111	0.739	-0.368	1170	0.713	-0.03308	0.08990	-0.20947	0.14332	
	Equal variances not assumed			-0.354	68.608	0.725	-0.03308	0.09351	-0.21964	0.15349	



**Fig. 4.** Value priorities of Peerby and Ecomodo users.

**Table 11**  
Motivations for joining of Peerby and Ecomodo users.



orientation were dissimilar to those of the UK population (Section 3). Contrary to expectations, Peerby respondents prioritised self-transcendence and openness to change values over self-enhancement and conservation values, a value orientation typically considered supportive of pro-social and pro-environmental behaviour and also found among Ecomodo members by [Piscicelli et al. \(2015\)](#). Moreover, the Dutch population particularly endorsed self-enhancement values (especially power), which may suggest that they attribute importance to ownership of material possessions and have little propensity to share them.

The analysis also revealed a substantial similarity in value priorities between users of the two platforms and that in both cases the value orientation of platform users tended to differ from the wider population. This suggests that their contrasting market fortunes may be more directly attributed to differences in their business model design and execution than user values. In particular, the platforms exhibit distinct value creation and value capture dynamics, as well as diversity in the capability to experiment and innovate their business model.

First, Peerby limited its scope to objects, as opposed to Ecomodo's wide-ranging inventory that included skills and physical spaces (e.g. spare rooms). This supports research by the [Collaborative Lab \(2014\)](#), which identified a lack of product focus as one of the most common reasons for failure of sharing platforms. Moreover, an unclear value proposition may have contributed to Ecomodo's misfortune; it assumed that a combination of gifting, micro-enterprise and fundraising would provide an all-encompassing motivation model able to drive critical mass across diverse audiences and secure sufficient density of items in a local area ([Popp, 2012](#)). In practice, however, the variety of possible motivations for participating and ways to conduct transactions online (i.e. lending and borrowing for free, renting for a fee or donating proceeds to charity) may have made it difficult for users to identify how to interact with the platform most effectively. Few and geographically scattered active users across the UK generated a low number of transactions, of a typically low value, and this hindered Ecomodo's growth and financial sustainability ([Piscicelli, 2016](#)). Rather than relying on transaction fees to generate revenue as Ecomodo did, Peerby initially launched a completely free to use platform in order to quickly build up a critical mass of users and then piloted a paid version of the service in selected cities as a 'proof of concept' to attract investment and scale up.

Second, the platform design is likely to have played a key part in making Peerby and its underlying business model more compelling than Ecomodo. In contrast with Ecomodo, Peerby implemented a demand-based system that made local borrowing and lending easy. Users request the item they are looking for and the site asks their closest Peerby neighbours whether they have the item. [Peerby \(2015b\)](#) claims that this push-notification mechanism enables a quick response and has resulted in a higher success rate than any other goods-sharing platform. It has also eliminated the need to have a large, regularly updated, catalogue of available items, which

relies on users uploading information about their possessions on the site, as in the case of Ecomodo. When a suitable match is found, Peerby facilitates the transaction process by connecting the lender and the borrower through a messaging service. By contrast, to finalise a transaction on Ecomodo, users were required to send and accept a 'contract', an option that was poorly understood and not well received by some users ([Piscicelli, 2016](#)).

Finally, Peerby showed high levels of strategic agility (see [Doz and Kosonen, 2010](#)) and ability to renew and transform its business models compared to Ecomodo. Since its launch, Peerby has strived for continuous business model innovation. For example, in 2015 in the Ghent area of Belgium it tested Peerby PRO, a partnership with tool hire and rental company Huurland, in order to enlarge Peerby's catalogue with larger and more expensive objects hard to find among neighbours (e.g. trailers, sanders, concrete mixers, saws). When a request for such an item found no positive response within 24 h, Peerby passed it to Huurland (upon agreement with the would-be borrower), and deals through this system were encouraged by a 10% discount ([Peerby, 2015a](#)).

## 6. Conclusion

In a context of concerns about resource use, sharing-based business models, a particular type of sustainable business model, have untapped potential to deliver positive economic, social and environmental impact. This paper sheds light on key mechanisms behind P2P goods-sharing platforms, what determines their success or failure and how they can be scaled-up to provide higher impact by comparing the case of Ecomodo and Peerby.

Existing literature on multisided platforms offered insights on the dynamics of P2P sharing-based business models. In particular, building a thriving P2P sharing platform was deemed dependent on the ability to identify a significant market friction, build a critical mass of users, get the correct pricing level and structure, address competition and regulatory hurdles, and foster positive interactions between users. However, growth and economic viability are only partial indicators of the success of a P2P sharing platform. Arguably, the criteria to assess the success of sharing-based business models (especially if adopted by social enterprises) should go beyond traditional financial metrics (e.g. revenues) and take into account the platform's market penetration, the level and type of user engagement, and the social and environmental impact.

Based on these criteria, Ecomodo can be considered an unsuccessful P2P goods-sharing platform. A limited market penetration hampered its attempt to reach sufficient scale and resulted in too few user interactions (i.e. few people listed their possessions on the website, which made virtually impossible to find any match between offer and demand). Sporadic user activity failed to deliver a steady stream of revenues. By contrast, Peerby was able to secure a critical mass of users and boost the quality and quantity of transactions among its users by means of a more effective request-based system. Moreover, the provision of ancillary services demonstrated

the financial viability of the platform's business models and attracted additional funding that triggered further growth.

Whilst reaching scale seems to be crucial for achieving success, previous research by Darvojedja et al. (2013) has identified market acceptance as a major barrier for the wider uptake of sharing-based business models. The comparison between a successful and an unsuccessful P2P goods-sharing platform made it possible to advance knowledge on their market acceptance in relation to values. The empirical study showed that although P2P goods-sharing platforms may attract people with values different from those of the general population, they could still be successful. Peerby appeared able to facilitate its adoption by means of a compelling business model implementation. As such, it could be argued that the success or failure of a P2P goods-sharing platform may be more directly related to its business model design and execution than the types of user.

The study has limitations that need to be acknowledged. First, Peerby was used as an example of successful P2P goods-sharing platform but is still relatively young and may not necessarily be successful in the long run. Reaching a critical mass and attracting funding do not ensure long-term growth. Second, the questionnaire was administered to Peerby users in English, which may have discouraged some from participating and results may over-represent respondents with a higher level of education. The analysis also relies on data collected with different versions of the Schwartz's questionnaire and unequal sample sizes. Finally, while research on Dutch start-up Peerby makes it possible to extend the scope of findings to P2P goods-sharing platforms operating in countries other than the UK, further research could test the validity and generalisability of these results with comparable platforms in additional countries and other types of P2P sharing platforms.

## References

- Antikainen, M., Lammi, M., Paloheimo, H., Ruppel, T., Valkokari, K., 2015. Towards circular economy business models: consumer acceptance of novel services. In: ISPIIM (International Society for Professional Innovation Management) Innovation Summit, Brisbane 6-9 December, 2015.
- Anttonen, M., Halme, M., Houtbeckers, E., Nurkka, J., 2013. The other side of sustainable innovation: is there a demand for innovative services? *J. Clean. Prod.* 45, 89–103.
- Arevalo, J.A., Castellò, I., de Colle, S., Lenssen, G., Neumann, K., Zollo, M., 2011. Introduction to the special issue: integrating sustainability in business models. *J. Manag. Dev.* 30 (10), 941–954.
- Baden-Fuller, C., Haefliger, S., Giudici, A., 2016. Matchmaking Model. Available at: <http://businessmodelzoo.com/business-models/matchmaking-model>. (Accessed 1 August 2016).
- Belk, R., 2014a. Sharing versus pseudo-sharing in Web 2.0. *Anthropologist* 18 (1), 7–23.
- Belk, R., 2014b. You are what you can access: sharing and collaborative consumption online. *J. Bus. Res.* 67 (8), 1595–1600.
- Bocken, N.M.P., Short, S.W., 2016. Towards a sufficiency-driven business model: experiences and opportunities. *Environ. Innovat. Soc. Transitions* 18, 41–61.
- Bocken, N.M.P., Rana, P., Short, S.W., 2015. Value mapping for sustainable business thinking. *J. Ind. Prod. Eng.* 32 (1), 67–81.
- Bocken, N.M.P., Short, S.W., Rana, P., Evans, S., 2014. A literature and practice review to develop sustainable business model archetypes. *J. Clean. Prod.* 65, 42–56.
- Böcker, L., Meelen, T., 2017. Sharing for people, planet or profit? Analysing motivations for intended sharing economy participation. *Environ. Innovat. Soc. Transitions* 23, 28–39.
- Boons, F., Montalvo, C., Quist, J., Wagner, M., 2013. Sustainable innovation, business models and economic performance: an overview. *J. Clean. Prod.* 45, 1–8.
- Boons, F., Lüdeke-Freund, F., 2013. Business models for sustainable innovation: state-of-the-art and steps towards a research agenda. *J. Clean. Prod.* 45, 9–19.
- Botsman, R., 2015. The Sharing Economy: Dictionary of Commonly Used Terms. Available at: <https://medium.com/@rachelbotsman/the-sharing-economy-dictionary-of-commonly-used-terms-d1a696691d12#.ppjygete2>. (Accessed 1 August 2016).
- Botsman, R., 2013. The Sharing Economy Lacks a Shared Definition. Available at: <http://www.fastcoexist.com/3022028/the-sharing-economy-lacks-a-shared-definition>. (Accessed 1 August 2016).
- Botsman, R., Rogers, R., 2011. What's Mine Is Yours. How Collaborative Consumption Is Changing the Way We Live. HarperCollins, London.
- Chase, R., 2015. Who benefits from the peer-to-peer economy? *Harv. Bus. Rev.* Available at: <https://hbr.org/2015/07/who-benefits-from-the-peer-to-peer-economy>. (Accessed 1 August 2016).
- Codagnone, C., Martens, B., 2016. Scoping the Sharing Economy: Origins, Definitions, Impact and Regulatory Issues. Institute for Prospective Technological Studies. Digital Economy Working Paper 2016/01. Available at: <https://ec.europa.eu/jrc/sites/default/files/JRC100369.pdf>. (Accessed 1 August 2016).
- Codagnone, C., Biagi, F., Abadie, F., 2016. The Passions and the Interests: Unpacking the 'Sharing Economy'. JRC Science for Policy Report. Institute for Prospective Technological Studies. Available at: <https://ec.europa.eu/jrc/en/publication/eurscientific-and-technical-research-reports/passions-and-interests-unpacking-sharing-economy>. (Accessed 1 August 2016).
- Collaborative Lab, 2014. Collaborative Economy: Failure Map. Available at: <http://www.collaborativeconsumption.com/2014/12/18/failure-mapping/>. (Accessed 1 August 2016).
- Cusumano, M.A., 2015. How traditional firms must compete in the sharing economy. *Commun. ACM Assoc. Comput. Mach.* 58 (1), 32–34.
- Darvojedja, K., Verzijl, D., Nagtegaal, F., Lengton, M., Rouwmaat, E., Monfardini, E., Frideres, L., 2013. The Sharing Economy: Accessibility Based Business Models for Peer-to-peer Markets. Available at: <http://ec.europa.eu/DocsRoom/documents/13413>. (Accessed 1 August 2016).
- Dees, J.G., Battle Anderson, B., 2003. Sector-bending: blurring lines between nonprofit and for-profit. *Society* 40 (4), 16–27.
- Denning, S., 2014. An economy of access is opening for business: five strategies for success. *Strategy & Leadersh.* 42 (4), 14–21.
- Dentchev, N., Baumgartner, R., Dieleman, H., Jóhannsdóttir, L., Jonker, J., Nyberg, T., Rauter, R., Rosano, M., Snihur, Y., Tang, X., van Hoof, B., 2016. Embracing the variety of sustainable business models: social entrepreneurship, corporate entrepreneurship, creativity, innovation, and other approaches to sustainability challenges. *J. Clean. Prod.* 113, 1–4.
- Doherty, B., Haugh, H., Lyon, F., 2014. Social enterprises as hybrid organizations: a review and research agenda. *Int. J. Manag. Rev.* 16, 417–436.
- Doz, Y.L., Kosonen, M., 2010. Embedding strategic agility: a leadership agenda for accelerating business model renewal. *Long. Range Plan.* 43, 370–382.
- Eckhardt, G., Bardhi, F., 2015. The sharing economy isn't about sharing at all. *Harv. Bus. Rev.* Available at: <https://hbr.org/2015/01/the-sharing-economy-isnt-about-sharing-at-all>. (Accessed 1 August 2016).
- Eisenmann, T., Parker, G., Alstynne, M.W., 2006. Strategies for two-sided markets. *Harv. Bus. Rev.* 84 (10), 92–101.
- European Commission, 2011. The Roadmap to a Resource Efficient Europe. Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52011DC0571>. (Accessed 1 August 2016).
- European Social Survey, 2016. ESS7 – 2014 Documentation Report Edition 3.0. Available at: [http://www.europeansocialsurvey.org/docs/round7/survey/ESS7\\_data\\_documentation\\_report\\_e03\\_0.pdf](http://www.europeansocialsurvey.org/docs/round7/survey/ESS7_data_documentation_report_e03_0.pdf). (Accessed 1 August 2016).
- Evans, D.S., Schmalensee, R., 2016a. The Matchmakers: the New Economics of Multisided Platforms. Harvard Business Review Press, Boston, Massachusetts.
- Evans, D.S., Schmalensee, R., 2016b. Why winner-takes-all thinking doesn't apply to the platform economy. *Harv. Bus. Rev.* Available at: <https://hbr.org/2016/05/why-winner-takes-all-thinking-doesnt-apply-to-silicon-valley>. (Accessed 1 August 2016).
- Except Integrated Sustainability, 2015. Why Peerby Matters. Available at: <https://filepicker.oneplanetcrowd.com/api/file/D2EG5i3SE6MWS9Mcn7pQ>. (Accessed 19 January 2017).
- Flyvbjerg, B., 2006. Five misunderstandings about case-study research. *Qual. Inq.* 12 (2), 219–245.
- Frenken, K., Schor, J., 2017. Putting the sharing economy into perspective. *Environ. Innovat. Soc. Transitions* 23, 3–10.
- Hagiu, A., Rothman, S., 2016. Network effects aren't enough: the hidden traps in building an online marketplace. *Harv. Bus. Rev.* 94 (4), 65–71.
- Hagiu, A., Wright, J., 2015. Multi-sided platforms. *Int. J. Ind. Organ.* 43, 162–174.
- Hagiu, A., Wright, J., March 2013. Do you really want to be an eBay? *Harv. Bus. Rev.* 91 (3), 102–108.
- Hall, J., Clark, W.W., 2003. Special issue: environmental innovation. *J. Clean. Prod.* 11 (4), 343–346.
- Heinrichs, H., 2013. Sharing economy: a potential new pathway to sustainability. *Gaia* 22 (4), 228–231.
- Henten, A.H., Windekilde, I.M., 2016. Transaction costs and the sharing economy. *info* 18 (1), 1–15.
- Hirschl, B., Konrad, W., Scholl, G., 2003. New concepts in product use for sustainable consumption. *J. Clean. Prod.* 11, 873–881.
- Kortmann, S., Piller, F., 2016. Open business models and closed-loop value chains: redefining the firm-consumer relationship. *Calif. Manag. Rev.* 58 (3), 88–108.
- Krausmann, F., Gingrich, S., Eisenmenger, N., Erb, K.-H., Haberl, H., Fischer-Kowalski, M., 2009. Growth in global materials use, GDP and population during the 20th century. *Ecol. Econ.* 68 (10), 2696–2705.
- Leissman, K., Schmitt, M., Rohn, H., Baedeker, C., 2013. Collaborative consumption: towards a resource-saving consumption culture. *Resources* 2, 184–203.
- Libert, B., Wind, Y., Beck Fenley, M., 2014. What Airbnb, Uber, and Alibaba have in common. *Harv. Bus. Rev.* Available at: <https://hbr.org/2014/11/what-airbnb-uber-and-alibaba-have-in-common>. (Accessed 1 August 2016).
- Lüdeke-Freund, F., 2010. Towards a conceptual framework of 'business models for sustainability'. Knowledge Collaboration & Learning for Sustainable Innovation ERSCP-EMSU Conference, Delft, 25-29 October, 2010.
- Lüdeke-Freund, F., 2009. Business Model Concepts in Corporate Sustainability Contexts. From Rhetoric to a Generic Template for 'business Models for

- Sustainability'. Centre for Sustainability Management, Lüneburg. Available at: [http://www2.leuphana.de/management/csm/content/nama/downloads/download\\_publicationen/Business\\_Models\\_for\\_Sustainability.pdf](http://www2.leuphana.de/management/csm/content/nama/downloads/download_publicationen/Business_Models_for_Sustainability.pdf). (Accessed 1 August 2016).
- Martin, C.J., 2016. The sharing economy: a pathway to sustainability or a nightmarish form of neoliberal capitalism? *Ecol. Econ.* 121, 149–159.
- Martin, C.J., Upham, P., 2015. Grassroots social innovation and the mobilisation of values in collaborative consumption: a conceptual model. *J. Clean. Prod.* <http://dx.doi.org/10.1016/j.jclepro.2015.04.062>.
- Nadeem, S., Schor, J.B., Walker, E.T., Lee, C.W., Parigi, P., Cook, K., 2015. Viewpoints: on the sharing economy. *Contexts* 14 (1), 12–19.
- Peerby, 2016. Startup Peerby Raises \$2.2 Million from Users. Available at: <http://press.peerby.com/125333-startup-peerby-raises-2-2-million-from-users>. (Accessed 1 August 2016).
- Peerby, 2015a. Samenwerking Met Huurland Gent. Available at: <http://blog.peerby.be>. (Accessed 1 August 2016) (in Dutch).
- Peerby, 2015b. What Is Peerby? Available at: <http://support.peerby.com/customer/en/portal/articles/1497031-what-is-peerby->. (Accessed 1 August 2016).
- Piscicelli, L., 2016. Do I Share Because I Care? The Role of Values in the Acceptance, Adoption and Diffusion of Collaborative Consumption (Ph.D. thesis). Nottingham Trent University.
- Piscicelli, L., Cooper, T., Fisher, T., 2015. The role of values in collaborative consumption: insights from a product-service system for lending and borrowing in the UK. *J. Clean. Prod.* 97, 21–29.
- Planing, P., 2017. Business model innovation in a circular economy: reasons for non-acceptance of circular business models. *Open J. Bus. Model Innovat.* (in press).
- Popp, S., 2012. Ecomodo: Tackling the Confidence Issue in Peer-to-peer Goods Sharing. Available at: <http://www.marke2ing.com/ecomodo-tackling-the-confidence-issue-in-peer-to-peer-goods-sharing/>. (Accessed 1 August 2016).
- Porter, M.E., Kramer, M.R., 2011. Creating shared value: how to reinvent capitalism – and unleash a wave of innovation and growth. *Harv. Bus. Rev.* 89 (1/2), 62–77.
- PwC, 2015. Consumer Intelligence Series: the Sharing Economy. Available at: <http://www.pwc.com/us/en/industry/entertainment-media/publications/consumer-intelligence-series/assets/pwc-cis-sharing-economy.pdf>. (Accessed 1 August 2016).
- Ritchie, J., Lewis, J., McNaughton Nicholls, C., Ormston, R., 2014. *Qualitative Research Practice: a Guide for Social Science Students and Researchers*, second ed. Sage, London.
- Rochet, J., Tirole, J., 2003. Platform competition in two-sided markets. *J. Eur. Econ. Assoc.* 1 (4), 990–1029.
- Schaltegger, S., Hansen, E.G., Lüdeke-Freund, F., 2016. Business models for sustainability: origins, present research, and future avenues. *Organ. Environ.* 29 (1), 3–10.
- Schaltegger, S., Lüdeke-Freund, F., Hansen, E.G., 2012. Business cases for sustainability: the role of business model innovation for corporate sustainability. *Int. J. Innovat. Sustain. Dev.* 6 (2), 95–119.
- Schwartz, S.H., 2012. An overview of the Schwartz theory of basic values. *Online Readings Psychol. Cult.* 2 (1), 1–20.
- Schwartz, S.H., 1994. Are there universal aspects in the content and structure of values? *J. Soc. Issues* 50, 19–45.
- Schwartz, S.H., 1992. Universals in the content and structure of values: theory and empirical tests in 20 countries. In: Zanna, M. (Ed.), *Advances in Experimental Social Psychology*, vol. 25. Academic Press, New York, pp. 1–65.
- Schwartz, S.H., Cieciuch, J., Vecchione, M., Davidov, E., Fisher, R., Beierlein, C., Ramos, A., Verkasalo, M., Lönnqvist, J., Demirutku, K., Dirilen-Gumus, O., Konty, M., 2012. Refining the theory of basic individual values. *J. Pers. Soc. Psychol.* 103 (4), 663–688.
- Schwartz, S.H., Melech, G., Lehmann, A., Burgess, S.A.M., Harris, M., 2001. Extending the cross-cultural validity of the theory of basic human values with a different method of measurement. *J. Cross Cult. Psychol.* 32, 519–542.
- Stokes, K., Clarence, E., Anderson, L., Rinne, A., 2014. Making Sense of the UK Collaborative Economy. NESTA. Available at: [https://www.nesta.org.uk/sites/default/files/making\\_sense\\_of\\_the\\_uk\\_collaborative\\_economy\\_14.pdf](https://www.nesta.org.uk/sites/default/files/making_sense_of_the_uk_collaborative_economy_14.pdf). (Accessed 1 August 2016).
- Stubbs, W., Cocklin, C., 2008. Conceptualizing a “sustainability business model”. *Organ. Environ.* 21 (2), 103–127.
- Sundararajan, A., 2016. *The Sharing Economy: the End of Employment and the Rise of Crowd-based Capitalism*. The MIT Press, Cambridge, MA.
- Svensson, G., Wagner, B., 2011. Business sustainability: frameworks and cases. *Eur. Bus. Rev.* 23 (4).
- van Alstyne, M.W., Parker, G.G., Choudary, S.P., 2016. Pipelines, platforms, and the new rules of strategy: scale now trumps differentiation. *Harv. Bus. Rev.* 94 (4), 54–62.
- van Weelden, E., Mugge, R., Bakker, C., 2016. Paving the way towards circular consumption: exploring consumer acceptance of refurbished mobile phones in the Dutch market. *J. Clean. Prod.* 113, 743–754.
- Vezzoli, C., Ceschin, F., Diehl, J.C., Kohtala, C., 2015. New design challenges to widely implement ‘Sustainable Product-Service Systems’. *J. Clean. Prod.* 97, 1–12.
- Yin, R.K., 2014. *Case Study Research: Design and Methods*, fifth ed. Sage, London.
- Yin, R.K., 2012. *Applications of Case Study Research*, third ed. Sage, London.
- Zhu, F., Furr, N., 2016. Products to platforms: making the leap. *Harv. Bus. Rev.* 94 (4), 73–78.