Article

Reputation Effects in Socially Driven Sharing Economy Transactions

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Abstract: Reputation has often been proposed as the central mechanism that creates trust in the sharing economy. However, some sharing platforms that focus primarily on social rather than economically driven exchanges have managed to facilitate exchanges between users without the use of a reputation system. This could indicate that socially driven exchanges are in less need of reputation systems and that having sufficient trust is less problematic. We examine the effect of seller reputation on sales and price as proxies for trust, using a large dataset from a Dutch meal-sharing platform. This platform aims to stimulate social interactions between people via meal sharing. Multilevel regression analyses were used to test the association of reputation with trust. Our main empirical results are that reputation affects both sales and price positively, consistent with the existing reputation literature. We also found evidence of the presence of an information effect, i.e., the influence of reputation on sharing decreases when additional profile information is provided (e.g., a profile photo, a product description). Our results thus confirm the effectiveness of reputation in more socially driven exchanges also. Consequently, platform owners are advised to use reputation on their platform to increase sharing between its users.

Keywords: reputation; reputation systems; trust; sharing economy; social exchange

1. Introduction

Reputation is often heralded as the reason why strangers trust each other via the internet [1] because it fosters trust between individuals by informing potential buyers about a seller's past behaviour and gives a buyer the possibility to sanction a seller if the latter engages in opportunistic behaviour [2,3]. However, with the rise of the sharing economy, exchanges have become more socially driven, thereby providing reasons why trust is developed through social mechanisms entailing a possible decreasing effect of reputation on trust. So far, the effect of reputation on online trust has been investigated mainly in the context of commercial platforms (e.g., eBay, TaoBao, and Airbnb), leaving the question of its effect in a socially driven context unanswered.

The rise of sharing platforms, such as Uber, Airbnb, and TaskRabbit, have changed consumption from a practice of ownership-based consumption into a blend of ownership and sharing [4]. This type of consumption has been termed *the sharing economy*, a socio-economic system in which products and services are exchanged between individuals via internet-based applications [5]. Although many platforms are considered part of the sharing economy, there is great heterogeneity

among them. One way to categorize platforms is by the way they facilitate economically and socially driven exchanges. Platforms that facilitate economically driven exchanges fulfil users' economic needs, for example, by providing the possibility to make profits and by scaling trading activities. The accommodation platform Airbnb, for instance, enables homeowners to earn a living through easy access to booking opportunities. Conversely, platforms can arrange socially driven exchanges by satisfying users' social needs through the creation of social connections with others and the development of a sense of community. An example is the free accommodation platform Couchsurfing, which aims to provide social interaction and cultural exchange between travellers. Such platforms contribute to social sustainability (i.e., collective aspects of social life) by stimulating social interactions and enhancing a sense of community [6].

For both types of exchanges, reputation can be effective in building trust because the public display of an actor's past actions could lead to future consequences, thereby creating an incentive to show good behaviour [7]. Reputation is a useful mechanism, especially in a situation where actors are self-interested and will behave opportunistically when given the chance. However, socially driven exchanges can be expected to involve parties who are loyal, care for the common good, assume multiple responsibilities, and have a propensity to resolve conflicts in harmony [8]. Thus, such actors are less likely to act out of self-interest and to behave opportunistically. Consequently, the anticipated prosocial motivation of others might reduce one's need for reputation when trusting others.

Based on the above, it can be expected that the development of trust between users depends on the extent to which platforms provide for economically or socially driven exchanges and on the extent to which platform users are prosocially motivated. The tool and equipment platform Peerby, for instance, does not have a reputation system to facilitate trust, and users have to rely on the benevolence and integrity of others to trust. One might assume that trust on such sharing economy platforms can be developed more easily. However, we argue that socially driven exchanges also involve trust issues that entail reputation effects when a reputation system is available, because one might want to sanction the other in the event of untrustworthy behaviour. In addition, someone's trustworthiness might also be judged via judgments of others rather than only one's own experience.

Our study contributes to the literature in the following way. First, it sheds light on the effect of reputation in socially driven exchanges in the sharing economy. We thereby respond to the call for research by Belk [9], who questions whether reputation facilitates trust equally across the spectrum of sharing economy platforms. Furthermore, we extend the existing body of literature regarding reputation effects beyond the context of economically driven exchanges. Most studies have investigated the effects of reputation in economically driven exchanges (especially eBay, Airbnb); this makes it uncertain whether the same effects hold in socially driven exchanges.

The specific objective of this study is to investigate the role of the effect of reputation on trust in a socially driven exchange setting in the sharing economy. Our main research question is: 'To what extent does reputation promote trust in socially driven exchanges in the sharing economy?' To answer this question, we used a dataset of a Dutch meal-sharing platform, Shareyourmeal (SYM), containing longitudinal transaction data from the start of SYM in March 2012 until March 2016. The main aim of this platform is to stimulate social interactions between users via the act of sharing meals, and prices are mostly only marginally above the price of the ingredients, making the social aspect of the exchange substantial and the economic aspect largely negligible. Consequently, this platform offers the opportunity to study the effect of reputation on trust in a socially driven exchange setting.

This article begins by providing a background of the sharing economy, trust and reputation. It will then go on to hypothesis development, data description, and the research method. Subsequently, the results and the conclusions are presented, and lastly, implications for both theory and management are provided.

2. Background

The sharing economy has been growing rapidly and has gained in popularity among the general population through an expanding ecosystem of online platforms [10,11]. It is an ecosystem that contains various economic practices, ranging from providing accommodation free of charge (e.g., Couchsurfing) to finding a paid pet sitter (e.g., PetHomeStay). Besides a changing consumption mode, corporations are also affected in the sense that traditional business models are pressurised and new business models are becoming more evident [12]. The emergence of the sharing economy has intrigued many researchers given its impact on society, the economy, and the environment. Moreover, the popularization of the sharing economy was initially accompanied with hopeful promises for the way we consume, work and interact [4]. Sharing resources would mean that we could own less, interact more with one another, and provide economic benefits for ordinary people [13]. However, in practice, it was found that sharing could lead to adverse effects, such as more consumption, racial discrimination, and a precarious position for workers [14,15]. Moreover, environmental drivers appear to be of minor importance for users to participate in the sharing economy [16]. The title of Martin's article 'The sharing economy: A pathway to sustainability or a nightmarish form of neoliberal capitalism?' illustrates the ambiguous attitude towards the sharing economy [17].

Notwithstanding such criticism, it is notable that most of the critique on the sharing economy concerns large commercially oriented platforms, such as Uber, Airbnb, and TaskRabbit. Additionally, most of the research on the sharing economy is directed at this type of platform [18], because, among other things, they are viewed as exemplars of the sharing economy, their impact on incumbents is greater (e.g., [19,20]), and more research data are available. As a result, sharing platforms that emphasize socially driven exchanges do not receive the same academic attention [21,22], although first and foremost they possess and contribute to public values. For example, by building stronger communities through the increase of social interactions, participation in the community, and perceived safety of community members [6]. Research into the functioning of such platforms would, therefore, be welcome because it could advance the understanding of how these platforms operate and consequently contribute to the enhancement of public values.

The term sharing economy is not commonly agreed upon [23]. The reasons for this include the rise of a multitude of platforms and ambiguity around the concept of sharing, which have resulted in disagreement about a precise definition of the sharing economy [24]. However, key elements of the sharing economy include the exchange of goods and services among peers, providing temporary access to individuals, while using online platforms as a mediator [4]. To include these elements, we define the sharing economy as 'an economic model based on sharing underutilized assets between peers without the transfer of ownership, ranging from spaces, to skills, to stuff, for monetary or non-monetary benefits via an online mediated platform' [18] (p. 2).

Regarding actors in the sharing economy, buyers are often referred to as consumers and sellers as providers [13]. To connect with common terminology, we use these terms throughout this study.

2.1. Information Asymmetry in the Sharing Economy

One of the largest impediments for people to participate in the sharing economy is perceived risk, which is caused by different information asymmetries [25]. Information asymmetry is the situation where one party has more or better information than the other. According to Akerlof's [26] classical lemons problem, information asymmetry allows a buyer to run the risk of buying a worthless good, but this could ultimately end in market failure. The sharing economy brings forth several information asymmetries between consumers and providers. First, consumers cannot inspect goods upfront or are unsure about a provider's ability to perform services. This makes it difficult for consumers to distinguish between low- and high-quality providers [27]. Also, both consumers and providers are unsure about each other's true intentions, which are important because meeting offline can entail personal safety risks. Lastly, the absence in most cases of legal safeguards heightens the risks for both consumers and providers in the event of theft, damage, or loss of products. To mitigate the situation

of information asymmetry, trust is identified as one of the key ingredients for successful transactions in the sharing economy [28,29]; and research has shown that reputation is one of the most important mechanisms for facilitating trust in the sharing economy. Mauri et al. [30], for instance, found that a provider's reputation was the core contributor to the popularity of an Airbnb listing, explaining almost 40% of its variation. Therefore, we use reputation to study how trust is formed between users in socially driven exchanges.

2.2. Trust and Reputation

Trust is studied extensively across different disciplines, such as psychology, sociology, and management [31]. Although there is no universally accepted definition of trust, a much-used definition is that of Mayer et al. (p. 715) [32], who define trust as 'the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party.' It is needed in situations where risk and interdependence exist [7], meaning that a person is willing to accept vulnerability and uncertainty. Risk is the perceived probability of loss, whereas interdependence implies that a person is dependent on someone else for his interests to be served [7]. As mentioned above, both elements are present in transactions in the sharing economy.

Reputation has proved to be an important trust mechanism in the sharing economy [33,34] and can be defined as 'what is generally said or believed about a person's or thing's character or standing' [35] (p. 5). Reputation in the sharing economy has often been operationalized through reputation systems, which collect feedback from members of a community regarding past transactions with other members [2], for example, in the form of ratings, referrals, and comments. Jøsang et al. have given an overview of existing and proposed reputation systems, indicating that they are effective in creating collaboration between parties unknown to each other. Nonetheless, various sharing platforms that focus on socially driven exchange have found a way to create collaboration between their users without the use of reputation systems. Peerby, for example, enables people to lend or borrow tools and equipment via a mobile app. When placing a request, and users are matched, there is no reputation information available for either the consumer or the provider. In an interview, Peerby announced that more than 250,000 people use its service, thereby indicating its popularity (https://www.nu.nl/ondernemen/5082410/daan-weddepohl-peerby-ik-heb-altijd-uitvinder-willen-worden.html). This raises the question of whether a reputation system is needed when the exchange is mainly socially driven.

According to Buskens and Raub [36], reputation can facilitate trust via two mechanisms, namely, control and learning. Control applies to a situation where a provider has short-term interests in abusing trust, although at the same time he is dependent on the buyer for his long-term results. In online transactions, providers can exercise control over sellers by rewarding or punishing sellers with positive or negative feedback. Learning refers to the information a buyer has at his disposal about a seller's characteristics, obtained from third parties' first-hand experience. If a buyer is informed that a seller has been trustworthy in the past, he might be more convinced that the seller will act trustworthily in the future as well.

In socially driven exchanges, trust in an actor might be based mainly on anticipating prosocial norms and values that are prevalent in a community. Prosocial norms (e.g., 'pay it forward', 'do not treat others as you would not like to be treated') are important for promoting cooperative behaviour, because a socially driven exchange occurs without the specification of any contract and with unspecified future obligations [37]. It has been shown that norms are a strong predictor of associated behaviour [38]. Therefore, prosocial norms imply that users can trust others based on expectations of what the group norm prescribes. Further, individuals who possess prosocial values (e.g., fairness, reciprocity) are more likely to think in a collective manner and are more cooperative towards others [39]. Although norms and values might be expected to be omnipresent on platforms driven primarily by socially driven exchange, there can still be uncertainty about whether everyone follows such norms and values.

Beliefs about whether specific individuals on a platform indeed follow the expected norms and values can be learnt through people's interactions when transacting, and, when positive, these interactions can form a trusting base to trust unknown others. In addition, the attractiveness of a partner for a specific socially driven exchange, such as how good an SYM provider is, is also uncertain for a consumer. This is an additional aspect about which a consumer can learn through a reputation system.

To see whether anticipated prosocial norms and values on a platform might be an alternative mechanism to create trust and complement the necessity for reputation to engender trust, we study reputation effects in a context in which we suspect that prosocial norms and values are more important than in a more economic context in which reputation effects are found.

2.3. Hypotheses

Many studies have demonstrated the positive effect of reputation on sales and price, which serve as proxies for trust (for reviews, see [40,41]). For instance, one of the earliest studies into reputation effects on online marketplaces by [42] found that reputation had a positive effect on the closing price of an auction for Harley Davidson Barbie dolls. A more recent study by [43] found that, for sellers in a cryptomarket for illegal drugs, a positive reputation influences both selling price and the number of sales. Because sales and price are widely used variables to measure trust, we use both variables in our analyses.

The positive relation between reputation and sales can be explained by the fact that a provider with a good reputation signals to potential consumers that he has shown trustworthy behaviour in the past and thus is likely to show trustworthy behaviour in the future [44]. In the SYM case, a consumer can use a provider's reputation as an indicator that he or she is able to satisfy other consumers by putting together quality meals. We thus hypothesize that:

Hypothesis 1 (H1). *At SYM, reputation is positively associated with the sale of a meal by a provider.*

Next, in a situation with information asymmetry, the fact that consumers are unable to inspect the goods upfront makes it difficult for them to observe the quality of a product. A provider's reputation might, therefore, serve as a signal for product quality, because consumers are willing to pay extra in return for receiving quality products [45]. Consumers on SYM, who have to choose between providers, might therefore be willing to pay more to providers with a higher reputation, because reputation increases their trust in the quality of the product. Hence, we hypothesize the following:

Hypothesis 2 (H2). *At SYM, a provider's reputation is positively associated with the price of a meal.*

2.4. Moderators of the Effect of Reputation

The effect of reputation on sales does not occur in isolation; even more so, other profile elements such as a profile picture and description, and a product photo and description, may also play a role in the ordering process. For instance, an experiment conducted by Xu [46] showed that the presence of a reviewer's profile picture had a positive effect on his trustworthiness, especially when a review was negative. The presence of certain profile elements could provide additional information about the provider and the product, and thus improve consumers' information asymmetry position, making them less reliant on reputation information. Therefore, we propose that the presence of various profile elements could decrease the effect of reputation on both the probability of selling a meal and on the price of a meal.

In the SYM case, we believe that all the profile elements (i.e., a profile picture and description and a product photo and description) have a negative moderating effect on the relation between reputation and both dependent variables (i.e., whether a provider shares a meal or not and the price of a meal). Reputation and profile elements can have a complementary effect when a consumer is unsure about making a decision based on reputation alone (e.g., when the provider has little or no

reputation). The availability of profile elements could reduce uncertainty about the provider and the meal. For example, it is likely that consumers would trust a provider with a profile picture and consequently pay less attention to reputation, and in the case of a provider who does not have a profile picture the effect of reputation is more important for trust. We suggest that this moderating effect holds for all profile elements. Because in addition to profile or product pictures, the number of words in profile or product descriptions have proved capable of increasing trust [47], we propose the following hypotheses:

Hypothesis 3a (H3a). *The effect of reputation on the probability of selling a meal decreases with the presence of a profile picture.*

Hypothesis 3b (H3b). *The effect of reputation on the price of a meal decreases with the presence of a profile picture.*

Hypothesis 4a (H4a). *The effect of reputation on the probability of selling a meal decreases when a profile description contains more words.*

Hypothesis 4b (H4b). *The effect of reputation on the price of a meal decreases when a profile description contains more words.*

Hypothesis 5a (H5a). *The effect of reputation on the probability of selling a meal decreases with the presence of a product picture.*

Hypothesis 5b (H5b). *The effect of reputation on the price of a meal decreases with the presence of a product picture.*

Hypothesis 6a (H6a). *The effect of reputation on the probability of selling a meal decreases when a product description contains more words.*

Hypothesis 6b (H6b). *The effect of reputation on the price of a meal decreases when a product description contains more words.*

Figure 1 displays the theoretical constructs of this study and the underlying hypothesised relations.
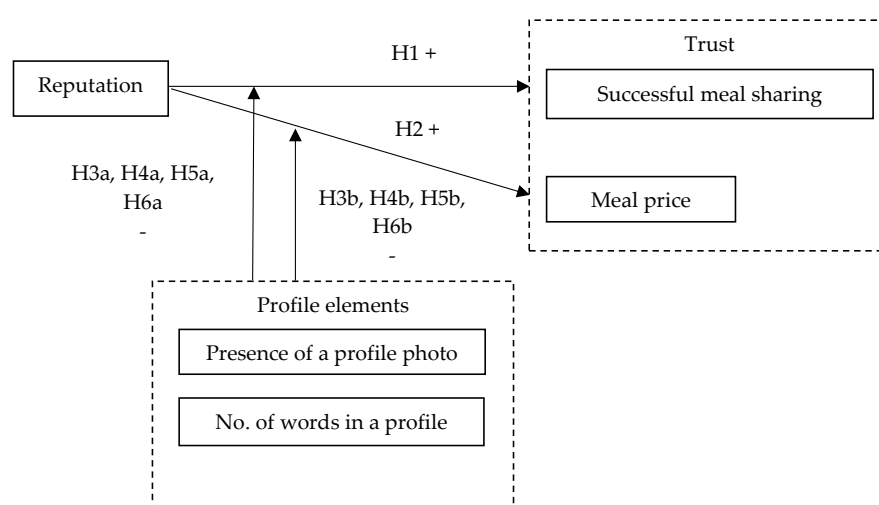

Figure 1. The research model.

3. The Empirical Context

The context of our study is SYM, one of the largest sharing platforms in The Netherlands. In this section, we describe how SYM facilitates socially driven exchange and, subsequently, we describe a typical transaction on this platform.

SYM was founded in March 2012 with the mission to bring neighbours together through sharing meals in The Netherlands. In the participants' view, food is the liaison between social interactions. Furthermore, they believe that sharing food helps to reduce food waste and additionally they want to encourage people to eat healthily. In that sense, SYM not only contributes to social sustainability (i.e., stimulating social interactions) but also to environmental sustainability (i.e., reducing food waste). SYM fits with our definition of the sharing economy because the skills of providers are being shared with consumers for a monetary compensation via the SYM website. At the time of the study, 14,971 providers and 94,110 consumers had joined the platform, and 96,797 meals were offered.

SYM facilitates socially driven exchange in a number of ways. First, the act of sharing meals provides social links to others, because providers and consumers meet in real life and have the opportunity to deepen social contact. This is also apparent from the motivation of providers to participate on the platform. They view their activities as 'entrepreneuring for the sake of communitarian well-being' [48] (p. 11), thereby emphasizing the importance of social links to other users. Moreover, they do not view their meals as a commodity but as a contribution to society at large. Second, transactions are carried out in a sharing context. Providers give access to their private homes to unknown consumers and share their cooking skills with others. The context of picking up a meal at someone's private residence is clearly distinguishable from, for example, buying a meal at a supermarket. The latter context is indicative of economically driven exchange, which is impersonal and bears signs of commercial exchange (e.g., cashiers, billboards). Third, meals that are shared via the platform are inalienable from the provider. In commodity exchange, the goods that are exchanged are alienable from the owner; it does not matter with whom we exchange. Sharing meals, however, is unequivocally connected with, and inalienable from, the provider, thus underlining the personal and social nature of the exchange. Finally, although money is involved in the transaction, it is just a mere compensation for groceries and the use of gas and electricity. According to SYM, it is explicitly not its goal to pursue profit maximization, nor would it be logically possible to earn a lot of money via the platform because cooking meals is not scalable. In sum, SYM offers a suitable case study to investigate the effect of reputation on sales and price, because the type of exchange can be predominantly characterized as social.

Let us describe the ordering process before turning to the data and research method. When a consumer searches for a meal, a list of meals is presented with item titles, a short item description, price, distance to the provider, and the provider's location (see Figure 2). Clicking on a meal reveals a visual and textual description of the meal (if present). If a meal has received 'thank you' notes or ratings from consumers in the past, they are shown here. On the meal page, it is possible to click further on the provider's profile page. The profile page provides several statistics about the provider, such as the number of meals shared, the number of followers, the number of received thank you notes, and the number and type of badges (see Figure 3). Also, a consumer can check whether the details of a provider are verified, whether a Facebook account is connected, and whether there are satisfied consumers. It is also possible to view all the thank you notes received by the provider.
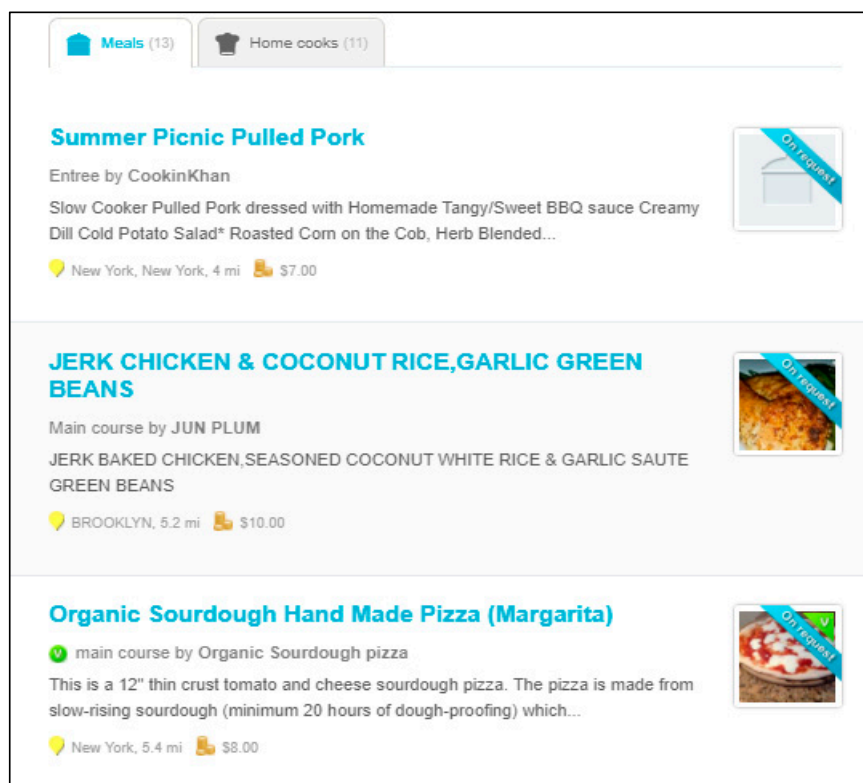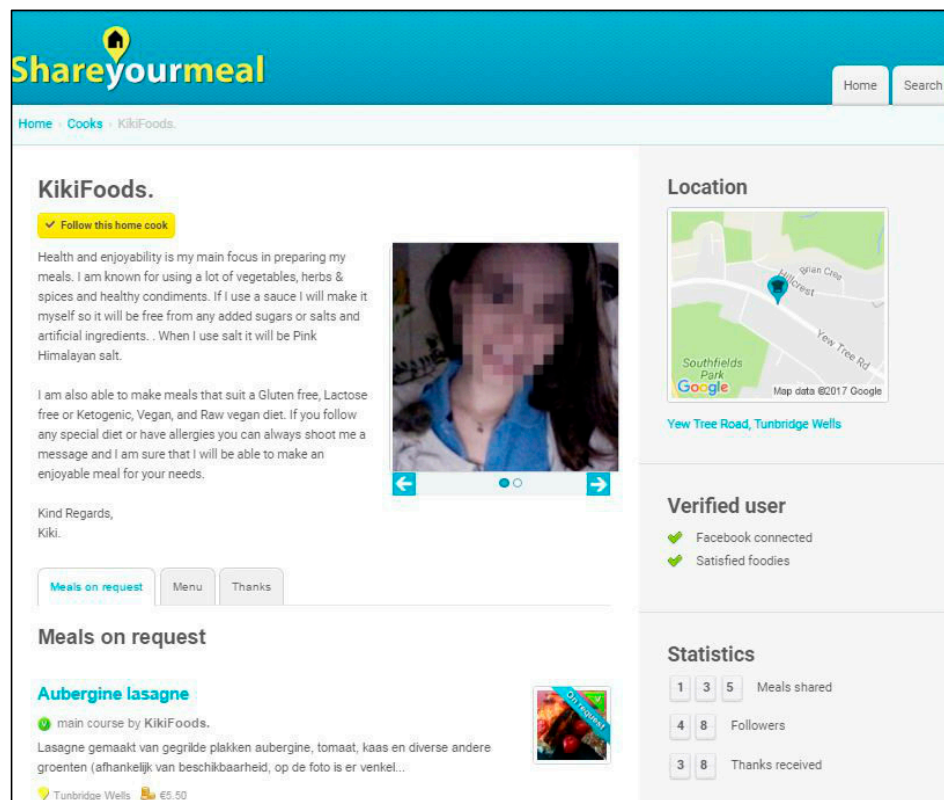
Figure 2. Example overview of meal listings.

Figure 3. Screenshot of a seller profile at Shareyourmeal.

4. Data and Method

The dataset provided to us by SYM consisted of anonymous information about 10,619 providers and 96,797 meals offered. Given that a provider can offer a meal multiple times, the unit of analysis is meals offered, which are nested within providers. To strive for a more homogeneous sample, only main courses were included in the analysis, leaving a total sample of 164,871 meals offered, 73,571 unique meals, and 8441 providers.

The dataset covers the period March 2012 to March 2016; this has the advantage of observing the evolution of a provider's reputation over time. All other provider and meal variables were fixed across the dataset.

4.1. Dependent Variable

Our main target variables were whether a meal offered was successfully shared or not (dichotomously measured: 0 = unsuccessfully shared; 1 = successfully shared) and the price of a meal in euros. In total, 75,684 meals offered (54.10%) were successfully shared, and 89,187 meals (45.90%) were offered but not picked up. This provided us with the possibility to compare meals that were successfully offered and picked up against meals that were offered but were unsuccessful in finding consumers.

Analysis of the meal price showed that the dataset contained illogical outliers (e.g., a meal price of € 1,000,006), most probably due to an incorrect data entry by the provider. To exclude such outliers, we used a cut-off point at the 99th percentile (i.e., €10), because outliers can have a disproportionate influence on future analyses. This left us with a final sample of 75,390 (46.14%) successfully and 88,011 (53.86%) unsuccessfully shared meals and 8355 providers.

4.2. Independent Variable

To operationalize reputation, we used the number of thank you notes received by a provider. Because of a skewed distribution, a log transformation was made to improve model fit [49]. Thank you notes are textual comments used mainly to leave positive feedback. Although it is possible to express criticism, this is rarely done. It is above all a token of affect and appreciation. Nonetheless, the number of thank you notes could be perceived as a substitute for reputation. That is to say, more thank you notes could indicate that a provider is highly appreciated by consumers, whereas few or no thank you notes might be a sign of low appreciation or limited experience by consumers.

4.3. Control Variables

We included several control variables in our model. First, to take account of the longitudinal nature of the data, we included a dummy variable for each calendar month when a meal was offered, to control for a possible time-trend. Next, to account for the possible demand and supply in a certain area, we respectively used the number of households and the ratio of the number of meals offered per household in a four-digit postal code area. Furthermore, the number of shared meals could be influenced by the disposable income of a household, i.e., the higher a household's income, the higher the demand. Therefore, we included the mean standardized income of households in a four-digit postal code area. (The variables number of households, ratio number of offerings per household, and mean standardized income per household per four-digit postal code area contained fewer than 0.41% missing values. We used multiple imputation on these variables to impute missing values. Results using multiple imputation and listwise deletion are largely similar, so listwise deletion results are presented). The data for number of households and households' disposable income were derived from, respectively, Statistics Netherlands 2013 and 2014.

Additionally, we controlled for the presence of a product photo and whether the provider uploaded a profile picture [50]. Research has shown that facial expressions are important signalling systems that can influence buying behaviour [51]. To analyse the providers' facial expressions displayed

in their profile pictures, we used Microsoft Azure Face API to scan the images in an automated way for emotions. To ensure that the automated emotion scores complied with real-life judgments, a random sample of 100 profile pictures was drawn, and these were manually judged and coded according to the same emotion classification. Analysis showed that only the happiness emotion correlated strongly enough with human ratings ($r = 0.82$) and was, therefore, the only emotion included in the regression analyses. Next, a provider's profile shows how many meals he or she shared in the past. This information could affect a provider's perceived trustworthiness, because the more meals he or she has shared in the past, the more other people have trusted him or her. Therefore, we controlled for the total number of meals shared by a provider at the time of the offering. Finally, previous research has shown that the number of words in a profile description can influence trustworthiness perceptions [47]. Therefore, we controlled for the number of words in a provider's profile description as well as the meal description.

The descriptive statistics of all variables are presented in Table 1.

Table 1. Descriptive statistics.

Dimension	Name	N	Mean	Median	Std. Dev.	Min	Max
Dependent variable	Meal successfully shared	163,401	0.46	0	0.50	0	1
	Meal price	163,401	5.16	5	1.46	0	10
Independent variable	Number of thank you notes	163,401	138.64	34	329.05	0	3277
Control variables	Presence of a product photo	163,401	0.72	1	0.45	0	1
	Presence of a provider's profile picture	163,401	0.88	1	0.33	0	1
	Degree of happiness in provider's profile picture	163,401	0.16	0	0.35	0	1
	Cumulative number of shared meals	163,401	141.73	35	335.36	0	3313
	Number of words in a profile description	163,401	112.79	60	255.16	0	1832
	Number of words in a product description	163,401	28.34	21	24.80	0	876
	Mean standardized income per household per four-digit postal code area	163,401	24.69	24.60	4.39	13.50	63.80
	Ratio number of offerings per household per four-digit postal code area	163,401	149.63	92.86	181.74	0.18	1135
	Calendar month (50 dummies)				*Not shown*		
Seller characteristics	Total number of offerings per provider	10,619	19.98	3	82.11	1	3807
	Total number of transactions per provider	10,619	14.02	1	80.24	0	3313
	Total turnover per provider	10,619	69.59	2.75	426.16	0	19,900.75
	Total number of thank you notes per provider	10,619	13.50	0	79.70	0	3277

4.4. Statistical Procedure

To test Hypotheses 1 and 3 to 6, we used multilevel logistic regression. Logistic regression is used to predict a dependent variable that is classified as binary, based on one or more predictors [52]. In our case, the dependent variable (i.e., the successfulness of a meal) was measured as binary. In multilevel research, the structuring of data in the population is hierarchical, and a sample from this data can

be viewed as a multilevel sample [53]. With such samples, the clustering of data is an extra source of variation and should be taken into account [53]. When analysing the successfulness of meals, it is important to consider that meals are nested within providers and that these scores are not independent. Therefore, we used multilevel modelling techniques to draw appropriate inferences and conclusions.

For the second hypothesis, a multilevel linear regression model was used with the price of a meal as the dependent variable. For both models, the same control variables were included, except that, for the first model, price was included as a control variable, and, for the second model, a successfully shared meal was included as a control variable. For ease of interpretation, we grand mean centred the number of thank you notes and the number of words in the profile and product description in our analyses.

Our model estimations were performed using Stata 13.

5. Results

Table 2 shows the regression model estimations for the analyses of the influence of reputation on the probability of successfully sharing a meal and on the meal price, and the various control variables.

Table 2. Regression models of meal successfully shared and meal price.

Variable Name	Meal Successfully Shared (y/n)		Meal Price in Euros	
	Model (1)	Model (2)	Model (3)	Model (4)
Number of thank you notes (log)	0.103 *** (0.016)	0.065 *** (0.017)	0.090 *** (0.007)	0.091 *** (0.008)
Cumulative number of shared meals [b]	0.008 (0.000)	0.049 *** (0.000)	−0.02 *** (0.000)	−0.016 * (0.000)
Provider's profile picture present (y/n)	0.296 *** (0.046)	0.071 (0.095)	0.325 *** (0.039)	0.325 *** (0.066)
Product photo present (y/n)	0.251 *** (0.029)	0.241 *** (0.031)	0.096 *** (0.022)	0.096 *** (0.022)
Number of words in the meal description [b]	0.415 *** (0.062)	0.429 *** (0.054)	0.561 *** (0.077)	0.584 *** (0.065)
Number of words in the provider's profile description [b]	0.074 (0.049)	0.063 (0.032)	0.250 *** (0.059)	0.246 *** (0.055)
Degree of happiness in provider's profile picture	0.300 *** (0.056)	0.294 *** (0.056)	−0.124 ** (0.046)	−0.126 ** (0.046)
Meal price	0.068 *** (0.013)	0.067 *** (0.013)		
Mean standardized income per household	0.003 (0.005)	0.003 (0.005)	0.024 *** (0.004)	0.024 *** (0.004)
Ratio of offerings per households	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)
Number of households	0.083 *** (0.008)	0.081 *** (0.008)	0.039 *** (0.007)	0.039 *** (0.007)
Number of months meal offered	−0.019 *** (0.002)	−0.020 *** (0.002)	0.004 *** (0.001)	0.004 ** (0.001)
Meal successfully shared (y/n)			0.074 *** (0.012)	0.074 *** (0.012)

Table 2. *Cont.*

Variable Name	Meal Successfully Shared (y/n)		Meal Price in Euros	
Interaction effects				
Profile picture * Number of thank you notes (log) [a]	−0.073 * (0.035)		0.002 (0.020)	
Number of words in a profile description [a,b] * Number of thank you notes (log) [a]	−0.037 *** (0.008)		−0.002 (0.003)	
Product picture * Number of thank you notes (log) [a]	−0.038 * (0.017)		−0.012 (0.011)	
Number of words in a product description [a,b] * Number of thank you notes (log) [a]	−0.014		−0.027	
Constant	−1.559 *** (0.150)	−1.145 *** (0.176)	3.025 *** (0.108)	3.024 *** (0.124)
Level 1: Provider	1.302 *** (0.052)	1.273 *** (0.050)	0.254 *** (0.014)	0.255 *** (0.014)
Residual			−0.107 ** (0.037)	−0.108 ** (0.037)
Observations	163,401	163,401	163,401	163,401
Number of providers	8355	8355	8355	8355

Notes: [a] Variables are grand mean centred. [b] Variables are divided by 100. Robust standard errors in parentheses. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Test of Hypotheses

The results of Model 1 show that the number of thank you notes positively affects the probability of successfully sharing a meal ($b = 0.103$, $p = 0.001$); this indicates that an increase in the number of thank you notes positively influences the likelihood of selling a meal. The coefficient for the number of thank you notes is 0.103, meaning that, for a one-unit increase in the number of thank you notes (log), we expect a 0.103 increase in the log-odds of the probability of a meal being sold, holding all other independent variables constant. This finding supports H1.

Our second hypothesis stated that reputation positively influences the price of a meal. According to Model 3, the number of thank you notes indeed has a positive effect on meal price ($b = 0.090$, $p = 0.001$). So, if the number of thank you notes increases by factor 10, the meal price increases by [exp $(0.090 \times \ln(10)) -1$] = 0.23 euro. Although this might be a minor increase in price, the reputation effect is economically significant. These results clearly confirm H2.

According to hypothesis H3a, we would expect a negative moderating effect between the number of thank you notes and the presence of a profile picture. Model 2 shows that the moderating effect is significant ($b = -0.038$, $p = 0.037$), indicating that indeed the reputation effect on the probability of sharing a meal is greater when a provider does not have a profile picture than when he does; therefore, H3a is supported. The moderating effect on the price of a meal (Model 4) was not significant ($b = -0.012$, $p = 0.004$), thereby showing no support for H3b.

Hypothesis 4a claimed a negative moderating effect between the number of thank you notes and the number of words in a provider's profile description on the probability of sharing a meal. The findings (Model 2) show that the moderating effect is significant ($b = -0.037$, $p = 0.001$), meaning that the effect of reputation on the probability of sharing a meal is greater when a provider has fewer words in his or her profile description. These findings show support for H4a. The moderating effect on the price of a meal (Model 4) was not significant ($b = -0.002$, $p = 0.582$), thereby not supporting H4b.

According to Model 2, a significant moderating effect was found between the number of thank you notes and the presence of a product photo on the probability of sharing ($b = -0.038$, $p = 0.023$); thus, H5a is supported. No significant moderating effect was found for the number of thank you notes and a product photo ($b = -0.012$, $p = 0.247$) on the price of a meal (see also Model 4). Hence, H5b is not supported.

Lastly, no significant moderating effects were found between the number of thank you notes and the number of words in a product description for successfully sharing a meal ($b = -0.014$, $p = 0.709$) and for the price of a meal ($b = -0.027$, $p = 0.423$). Consequently, neither H6a nor H6b is supported. Summarizing, there is quite some evidence that the effect of thank you notes on the probability of sharing a meal is moderated by product and profile information, which is also able to create trust, but such moderating effects are not found on price. We return to this in the discussion.

In both regression models, we accounted for several control variables. The coefficients of the control variables across analyses point in the expected direction.

6. Discussion

Reputation is often referred to as 'the new currency' in the sharing economy [54], as it is effective in building trust between strangers [33]. However, in socially driven exchanges one could expect that reputation might become superfluous for developing trust because trust can be developed, for example, through prosocial norms and values. Because most studies have investigated the effect of reputation on trust in an economically driven exchange setting, it remained unclear whether reputation builds trust in a social context. Insight into the working of reputation in socially driven exchanges furthers our theoretical understanding of how reputation operates under different exchange conditions. To study the effect of reputation on trust in a socially driven exchange setting, we used longitudinal data from the meal-sharing platform, SYM. From regression analyses, we found that reputation largely influences trust similarly as observed in economically driven exchanges. In that respect, SYM's reputation system

follows what is referred to as Yhprum's Law (Yhprum is Murphy spelled backward) and can be interpreted as 'systems that shouldn't work sometimes do, or at least work fairly well' [55] (p. 29).

First, we found that reputation, operationalized through the number of thank you notes received by a provider, had a positive significant influence on a consumer's decision to buy a meal (support for H1). These results indicate that the more thank you notes received by a provider, the higher the probability of sharing a meal. This finding is consistent with those of other studies showing that reputation influences consumer choice (e.g., [43,45,55]). This finding also corresponds with uncertainty reduction theory, which states that people actively seek to reduce feelings of uncertainty by seeking as much information as possible about the other person [56]. The availability of the number of thank you notes might be interpreted by consumers as useful information that they can use to reduce their uncertainty regarding the provider and the meal.

Second, we found a positive effect of reputation on the meal price (support for H2). This suggests that high-reputation providers can benefit from their accumulated reputation by raising their prices. This finding is consonant with empirical findings in the reputation literature. For example, Houser and Wooders [57] found that seller reputation in eBay auctions has a positive influence on the final auction price. In a sharing economy context also, it was found that a provider's reputation has a positive influence on an Airbnb listing price [58].

Furthermore, this study found significant moderating effects between reputation and the presence of a profile and product picture and the number of words used in a provider's profile description on the probability of sharing a meal (support for H3a, H4a, and H5a). These results provide evidence of an 'information effect', i.e., information cues relating to a provider and the product can reduce a consumer's uncertainty about buying a meal and consequently reduces the need for reputation. Thus far, a moderating effect of a profile picture on the relation between reputation and trustworthiness has been demonstrated in an experiment by Xu. Our study proves, based on actual transaction data, that this effect is present. On the other hand, no moderating effects were found between reputation, a profile and product picture, and the number of words in a product description on the price of a meal (no support for H3b, H4b, H5b, and H6b). A moderating effect between reputation and the number of words in a product description on the probability of sharing a meal was not found either (H6a). These findings suggest that the information effect is primarily observed in actual purchasing behaviour rather than through the product price. We can only speculate about reasons why these moderating effects are found for sharing probability and not for price, but further research should dive deeper into this. One reason might be that, in SYM, for one dependent variable (successful sharing of a meal) one information effect (e.g., the presence of a profile picture) is sufficient for a customer to buy a meal from a provider; on the other hand, no information effect on willingness to pay more was found in this study. Perhaps additional signals would be required to trigger this information effect for price.

6.1. Implications

The present study has revealed that reputation is an effective mechanism for promoting trust in markets that facilitate socially driven exchanges. This fits in with Kreps et al.'s [59] economic framework whereby buyers form trusting beliefs about sellers based on their observation of past transactions. Although sharing platforms contain social aspects and trust might develop along those lines, formal trust measures, such as reputation, are still relevant in creating trust. The findings provide support for the premise that trust building in socially driven exchanges in the sharing economy cannot be differentiated per se from that in economically driven exchanges. Reputation can also be relevant in more socially driven types of exchange.

From this study, we identify three managerial implications. First, platforms that facilitate socially driven exchange but do not have a reputation system can still improve the willingness of consumers to transact by implementing one. It has been shown that consumers use reputation, even in a rudimentary form such as the number of thank you notes, to inform their buying decisions. This could mean that using reputation could increase the number of transactions between existing users and attract new

users, because reputation can contribute to reducing information asymmetry. In the case of SYM, an increase in transactions could result in the enhancement of social sustainability in neighbourhoods through increased social interactions. Second, providers in sharing markets are advised to pay attention to their profile on the platform. Our study has shown that consumers pay attention to a provider's reputation in their purchasing decision. In order to be successful in sharing, a provider's reputation does matter. This message can also be communicated by platform owners to providers, because more sharing contributes to the success of the platform. Moreover, given the information effect, providers are advised to invest in their profile when they do not have much reputation (yet). It has been shown that reputation matters less in the presence of profile information, such as profiles or product photos and extensive profile or product descriptions. Lastly, consumers on sharing platforms can be actively asked to rate providers and leave feedback on sharing platforms in order to help future consumers in making a buying decision.

6.2. Limitations and Directions for Future Research

As with every study, we encountered limitations that should be addressed in future research. First, our measure of reputation did not include the possibility of sanctioning; this makes it less comparable with other platforms that have implemented a sanctioning system, such as a 5-star rating system (e.g., Airbnb). Sanctioning, in our case, would be somewhat possible by not thanking a provider at all, and this would make it more comparable. The number of thank you notes, nonetheless, does inform potential consumers about satisfied consumers that shared a meal with the provider in the past and thus can form a base from which to infer future behaviour. Second, we assumed that the exchange between providers and consumers on SYM can be characterized as a socially driven exchange. However, we cannot be completely certain that the exchange is indeed entirely social, because we did not measure this explicitly. It could be that exchanges on SYM are more economically driven, although SYM exhibits many characteristics that seem to provide for a socially driven exchange. Therefore, we suggest measuring the type of exchange on sharing platforms to ascertain which exchange type fits best.

Given our research findings, work on the application of reputation in the sharing economy is still necessary. To foster trust between participants on sharing platforms, the inclusion of reputation would be advisable. However, the question still remains as to how a reputation system for sharing markets should be designed. In the SYM case, reputation is also a sign of affection, and it was an explicit design choice of the platform owner not to include a sanctioning option. It remains to be seen whether a reputation system including sanctioning, like the one on eBay, would work better for SYM. Having a reputation system based on control and sanctioning could possibly hurt the sense of community and consequently participation on the platform. Therefore, the nature of the platform and type of exchange should be taken into account in designing an effective reputation system.

7. Conclusions

Reputation is par excellence a mechanism that promotes trust and cooperation in economically driven exchanges, but this need not apply for socially driven exchanges. However, our results show that a provider's reputation is relevant to purchasing decisions and to setting the product price in a meal-sharing market. This study illustrates that reputation can be relevant in creating trust in socially driven exchanges as well as in economically driven exchanges.

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