Blockchain and Trust in the Platform Economy: The Case of Peer-to-Peer Sharing

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Abstract. Blockchain technology is an innovation of the 21st century that is supposed to act as a trust-building factor and may provide the foundation for trust-free systems as well as market exchanges. We investigate how the trust-related properties of blockchain technology influence trust relationships of participants in the platform economy. Building on the pilot study of Hawlitschek [1], we conduct a scenario-based online survey with participants taking the role of a customer on a blockchain-based peer-to-peer rental platform. Our results confirm that while trust in peers and shared products have no overall significant effect on rental intentions, trust in blockchain technology and the community of blockchain users drive rental intentions mediated by trust in the blockchain-based platform. Our study sheds light on how established trust relationships shift from a peer and product focus towards trust in platforms and their underlying technology.

Keywords: peer-to-peer sharing, platform economy, blockchain, trust

1 Introduction

The emergence of thriving platforms (e.g., eBay, Airbnb, Uber) diversifies and changes e-commerce [2, 3]. Nascent platform ecosystems crucially depend on a careful balance of aspects such as openness and control, adequate value capture mechanisms, and, importantly, on building trust [4]. Within the broader platform economy, peer-to-peer (P2P) sharing platforms are particularly flourishing [5]. The terminology "sharing economy" is a multifaceted concept that is associated with ideas ranging from social and sustainable world improvement to a future of neoliberal platform capitalism. Following the European Commission, we understand it as an environment for users to (fee-based) grant one another access to underused resources [6]. The European Commission expects annual spending of €27.9bn on P2P platforms within the EU-28 states [7]. This domain differs from traditional e-commerce insofar as offers and services on P2P platforms are often run by private individuals. Consequently, users face economic exposure caused by unreliability or fraudulent offers that undermine the fundamental collaborative mindset of the sharing economy

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[8], making one factor particularly decisive—trust, so to speak the quintessence of the sharing economy [9–11].

Trust itself is an area of research considered from various angles, which, in turn, resonates with versatile concepts and theories for addressing it. For the connection of trust with the sharing economy, literature highlights the relationship between three main sides: Peers, products, platforms [10, 12, 13]. In this work, we focus on trust from the perspective of the platform's underlying technology. Söllner et al. [14] demonstrate that trust in the environment enabling the platform is an antecedent for trusting the platform provider. Beyond the Internet, the typical technological layer, which enables the sharing economy [15], new environments for enabling P2P sharing platforms are arising—among these, the blockchain is probably the most popular [16, 17]. The blockchain is attributed to affect trust [18] and, beyond that, to be the technology that is capable of establishing true trust-free sharing economy environments [19, 20].

Against this backdrop, we shed first light on trust relationships in a blockchain-enabled sharing economy environment. Our overarching research question is:

RQ: *How do blockchain-enabled platforms frame trust perception and their intention to enter a transaction?*

To answer this question, we develop our research model building on a previous pilot study from Hawlitschek [1] and substantiate it with a more representative sample. In addition, we conduct further analyses on demographic and character trajectories and provide insights from qualitative analyses. Overall, we argue that a platform that includes a blockchain mechanism functions as a prospect of a trustable technological environment where users are more willing to enter transactions. Using a scenario-based online survey, we assess individual effects of both blockchain technology- and community-related aspects on trust in the platform, its peers, and its products and, ultimately, how this connects to their willingness to enter a transaction.

2 Related Work and Theoretical Background

The P2P sharing economy serves as a hypernym for a variety of platforms, activities, and services [15]. As a sub-category of e-commerce, it is also subject to the fact that the facilitation of transactions via the Internet lacks the development of social and economic bonding to induce trust between the transaction partners [21]. Furthermore, while in traditional e-commerce, users mainly interact with professional vendors (B2), transactions on P2P sharing platforms rely upon two private individuals [22]. These individuals usually have not met face to face before [23], and, typically, interact with each other for the first time [24]. The mere existence of mutual trust between these two peers, however, is not sufficient to engender a transaction, if it takes place within an environment that is perceived as untrustworthy [2, 13, 25, 26]. Consequently, to understand trust relationships on P2P sharing platforms, trust needs to be considered from a threefold perspective—peers, platforms, and products [10].

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This renders trust a crucial element for a P2P sharing platform. Also referred to as the "most often used word in any debate about the sharing economy" [27], it is a widely discussed topic in literature.

To induce trust, platform operators incorporate reputation mechanisms (e.g., star ratings, text reviews, profile images) to establish trust in the products or services offered as well as in the individual peers [5, 28]. Nevertheless, the potential of reputation mechanisms is limited. Star ratings, the most popular among these, are subject to a positive bias, in which users tend to award the maximum rating [28–31]. On Airbnb, for instance, the average rating of close to 95% of all listings is between 4.5 or 5.0 stars, and virtually no listing has a standing rating of 3.5 stars or below [32]. Moreover, this positivity bias also applies to text reviews [28, 33], diminishing the informative power of these mechanisms. Even self-generated reputation mechanisms such as profile images are subject to unwanted side effects. While profile images are found to engender trust in the formation of a transaction [34], they may foster discrimination, a typical phenomenon on P2P sharing platform [35, 36]. This becomes particularly evident, considering that the majority of peers on those platforms reveal their faces with their self-uploaded profile images [28].

Beyond trust induced by reputational mechanisms, trust may be induced from a technological angle [14]. The blockchain, also referred to as a "trust machine" [37], promises to revolutionize P2P platforms and enable "trust-free" systems [38]. Despite calls to examine the blockchain technology in the context of P2P platforms [2, 39–42], Information Systems literature on blockchain-driven trust in this context is scarce [16, 17]. Previous research mainly considers blockchain-based systems from a cryptocurrency (e.g., Bitcoin) perspective [43–49], relies on simulation-based evidence [50], or constitutes conceptual work [51].

Summarizing, studies on the perceptual, intentional, and behavioral effects within the intersection of trust on blockchain-enabled P2P platforms remain scarce. Thereby, our study addresses a research gap by providing evidence on the causal effects of a blockchain-enabled platform on trust perception and their transaction-fostering potential.

3 Research Model and Hypotheses

We analyze the influence of blockchain as an underlying technology for P2P platforms on transaction intentions and corresponding trust perceptions, by replicating and extending Hawlitschek's pilot study [1] of trust relationships in a blockchain-enabled sharing scenario (see Figure 1).

The model is based on the well-established work of Söllner and colleagues [14], which suggest a model of trust in the context of general IS usage. We adapt their model by replacing trust in the Internet with trust in blockchain technology and trust in the community of Internet users with trust in the community of blockchain users. Next, we replace intention to use with intention to rent as a proxy for the intention to enter a transaction. Last, to adapt the model to the context of P2P sharing platforms,

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we replace the constructs trust in the information system and trust in provider with the 3P model from Hawlitschek et al. [10].

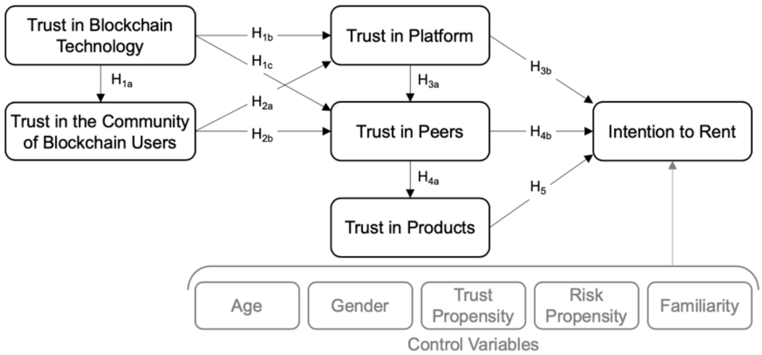

Figure 1. Research Model of Hawlitschek [1].

Following the argumentation of Söllner et al. [14], we hypothesize that trust in blockchain technology has a positive effect on three targets – that is trust in the community of blockchain users, trust in platform, and trust in peers. The rationale behind these hypotheses is that people tend to trust more in other parties if they act in a trustworthy environment [14]. This environment can be the Internet – as in the study of Söllner et al. [14] – but also a blockchain-based environment.

H_{1a}: *Trust in blockchain technology has a positive effect on trust in the community of blockchain users.*

H_{1b}: *Trust in blockchain technology has a positive effect on trust in platform.*

H_{1c}: *Trust in blockchain technology has a positive effect on trust in peers.*

As Söllner et al. [14] argue, IS often depend on services or content provided by members of the community of internet users, and thus, trust in an IS increases with the trust in the community. We argue that the same holds true for blockchain-based platforms. The effect might even be more prevalent since the community of blockchain users (in many cases) directly contributes to the core functionalities of the blockchain-based platform itself by contributing to the consensus mechanism. At the same time, it is likely that a contributor to the consensus mechanism is at the same time also a user of the platform, and thus, trust in the community will also positively affect trust in peers.

H_{2a}: *Trust in the community of blockchain users has a positive effect on trust in platform.*

H_{2b}: *Trust in the community of blockchain users has a positive effect on trust in peers.*

The 3P model of Hawlitschek et al. [10] suggests that the three targets of trust in peer, platform, and product have positive effects on transaction intentions in the sharing economy. Likewise, trust transfer theory suggests that trust may well be transferred between different sources, such as platforms and peers in the sharing economy (e.g., [52]) or peers and their offered products.

H_{3a}: *Trust in platform has a positive effect on trust in peers.*

H_{3b}: *Trust in platform has a positive effect on intention to rent.*

H_{4a}: *Trust in peers has a positive effect on trust in products.*

H_{4b}: *Trust in peers has a positive effect on intention to rent.*

H_5: *Trust in products has a positive effect on intention to rent.*

4 Method & Procedure

To test our research model, we conduct an online survey among a sample of Millennials of IS students (undergraduate) recruited at the Karlsruhe Institute of Technology using the organizing and recruiting software hroot [53]. For our study, using a well-educated student sample is reasonable, as this group of people represents one of the main user groups on P2P platforms [54–58]. First, participants were introduced to a blockchain-based P2P sharing platform. This introduction to the scenario was conducted by means of a written text and a subsequent video outlining the vision of a blockchain-based P2P sharing platform utilizing IoT assets—the Slock.it platform (https://slock.it/). Second, participants answered a questionnaire of fully randomized survey items (previously validated by Hawlitschek [1]). To ensure content validity, the operationalization of all constructs follows established scales from literature (see Table 4). Additionally, we control for demographic and trait information, including risk propensity [59], disposition to trust [60], familiarity with blockchain technology, age, gender, and highest education degree. We further included multiple attention checks, as well as language proficiency, to ensure a high level of quality among the answers. Participants were incentivized with monetary rewards (equaling €10.39/hour per person).

5 Results

Due to the exploratory research objective of the study and the inclusion of formative scales in the model, we employ Partial Least Squares Structural Equation Modeling (PLS-SEM) for the analysis [61, 62]. We follow the two-stage approach by Hair et al. [61] to analyze and interpret the research model.
Data collection took place in May 2019. Initially, 177 participants provided complete answers to the survey. Due to incorrect answers to one or more of the control questions, we excluded 16 participants from further analysis. The final sample consisted of 161 participants, a sample size adequate to detect small-sized effects with a power of .80 and alpha of .01 [63].

Within the sample, the average age was 23.30 (SD=3.44), and among the participants, about 35% were female. The survey lasted, on average, 16.14 minutes (SD=3.60). The results for risk propensity (mean=6.22, SD=1.96; measured on an 11-point scale ranging from 0: not at all willing, to 10: very willing to take risks) indicates that the sample's average tends to be willing to take risks. Regarding

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disposition to trust, the sample's mean value is 3.97 (SD=1.27; 7-point Likert scale with the endpoints 1: strongly disagree, 7: strongly agree) and for familiarity with blockchain technology the mean is 4.40 (SD=2.31; 11-point scale ranging from 0: not at all familiar, to 10: very familiar). Table 1 provides descriptive statistics.

Next, we analyze the quality of the measurement model, starting with evaluating internal consistency reliability, convergent as well as discriminant validity for the reflective constructs. For all these constructs, values for composite reliability (CR) and Cronbach's α are above the proposed cutoff value of 0.7 [smallest CR value TPR (.821); smallest Cronbach's α TPR (.719)], confirming internal consistency reliability. Concerning convergent validity, we assessed each construct's average variance extracted (AVE) and each indicator's outer loading. For the prior, all values were above the commonly applied threshold value of 0.5 [64], for the latter, however, two items [TPE1 (.611), TPR2 (0.683) and TPR3 (.684)] had an outer loading below 0.7 [61] (Table 4). Following Hair et al. [61], we examined whether the threshold values for AVE and internal consistency reliability can be reached by removing these items. Since the threshold values have already been met before, we decided to retain the items and proceed with the assessment of discriminant validity. The Fornell-Larcker criterion [65], the Heterotrait-Monotrait Ratio (HTMT), as well as the consideration of cross-loadings, were checked, all confirming sufficient discriminant validity. Table 1 summarizes the properties of the reflective measurement scales.

For the formative constructs, we analyze the variance inflation factor (VIF) of the formative indicators to assess the measurement models for collinearity between indicators. All VIF values were below 5 (highest value 1.181 for TBL1 and TBL2), indicating that no collinearity issues between the indicators are occurring. Formative indicator relevance and significance testing resulted in the decision to drop TBU1 (outer weight insignificant, and outer loading below 0.5). Last, we control for collinearity issues among predicting constructs. All VIF values are well below the cutoff value of 5 [61], providing evidence for not facing collinearity issues within our structural model.

Table 1. Properties of measurement scales. Diagonal values indicate the square root of AVE. * Denotes if HTMT confidence interval includes 1.

							Correlations					
Construct	Mean	SD	Cron. α	CR	AVE	HTMT*	ITR	TBL	TBU	TPE	TPL	TPR
ITR	3.157	1.312	.905	.940	.840	no	**.916**					
TBL	3.429	1.068	/	/	/	no	.559					
TBU	3.323	0.923	/	/	/	no	.233	.437				
TPE	3.157	0.822	.807	.874	.639	no	.309	.471	.424	**.799**		
TPL	3.152	0.925	.820	.881	.650	no	.544	.626	.473	.642	**.806**	
TPR	3.366	0.949	.719	.821	.535	no	.312	.505	.451	.614	.663	**.732**

To test the structural model, we employ PLS-SEM using SmartPLS 3.0 [66]. Path significances were obtained by means of bootstrapping with 5,000 subsamples, no sign changes, bias-corrected and accelerated, and two-tailed hypotheses testing. Figure 2 shows the results for the PLS structural model.

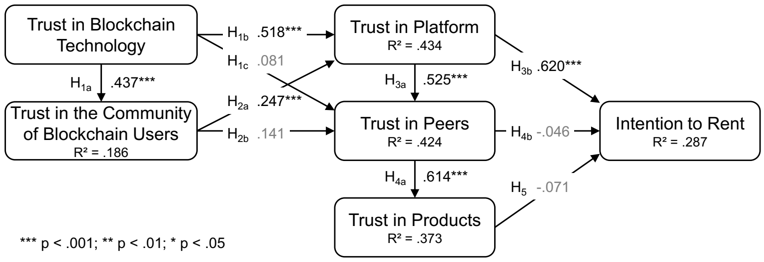

Figure 2. Results of PLS structural equation modeling (standardized path coefficients, R^2 adjusted)

As hypothesized, higher trust in blockchain technology has a positive influence on trust in the community of blockchain users (H_{1a}), as well as on trust in the service providing platform (H_{1b}). However, we do not find evidence for a significant relationship between trust in blockchain technology and trust in the providing peer, which is why hypothesis H_{1c} cannot be confirmed. In line with H_{2a}, higher trust in the community of blockchain users has a positive effect on trust in platform. The second hypothesis emanating from trust in the community of blockchain users, by contrast, is not significant, indicating no support for H_{2b}. Both hypotheses, which have their origin in trust in platform (H_{3a} and H_{3b}), can be confirmed, thereby suggesting that higher trust in platform leads to higher trust in peers and that it significantly increases the intention to rent a product. Following H_{4a}, we find evidence for higher trust in the providing peer leading to higher trust in their offered product. However, neither a positive effect of trust in peer on intention to rent (H_{4b}) nor of trust in product on intention to rent (H_5) can be confirmed – not confirming the proposed hypotheses.

Interestingly, only paths passing through trust in platform show a significant effect on the dependent variable intention to rent, revealing that trust in platform remains the only relevant predictor of intention to rent within the model. Overall, the model explains 28.7% (adj. R^2) of the variance in the intention to rent, with trust in platform being the only significant predictor ($f^2 = .259$; medium effect, classification following Henseler et al. [67]). Concerning the other effect sizes, the effect of trust in blockchain on trust in platform (.389) and the effect of trust in peer on trust in product (.605) can be classified as large, whereas the effect of trust in blockchain on trust in the community of blockchain users (.236), as well as of trust in platform on trust in peer (.272), constitute medium-sized effects. The remaining significant relationship of trust in community of blockchain users on trust in platform shows a small effect size (.088). Table 2 summarizes effect sizes for all significant paths.

Table 2. Effect Sizes following Cohen [68]

Independent Construct	Dependent Construct	Coef.	f^2	Effect Size

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TBL	→	TPL	.518	.389	Large
TBL	→	TBU	.437	.236	Medium
TBU	→	TPL	.247	.088	Small
TPL	→	TPE	.525	.272	Medium
TPL	→	ITR	.620	.259	Medium
TPE	→	TPR	.614	.605	Large

5.1 Multi-Group Analysis

To assess the effects of control variables, we conduct a multi-group analysis (MGA). Thereby, we can estimate sub-group specific effects (Table 3). MGA yields seven significant group-specific differences. First, the relation of TPE and TPR is stronger for male than for female participants. Next, the older half of participants account for the effect of TBL on TPL, while this effect is insignificant for the younger half. Furthermore, the senior participants show a more prominent effect of TPL on ITR, and, somehow surprisingly, show a significant negative effect of TPR on ITR. The effect of TBL on TBU is stronger for participants less familiar with the blockchain and risk-seeking participants. Last, we find an effect of TBL on TPE—exclusively driven by participants with lower trust propensity.

Table 3. Results of MGA Analysis.

	Gender				**Age**				**Familiarity**				**Risk Prop.**				**Trust Prop.**			
	m	**f**			**<23**	**>=23**			**<5**	**>=5**			**<7**	**>=7**			**<5**	**>=5**		
	n:105	n:56	|Δ|	Sig.	n:77	n:84	|Δ|	Sig.	n:87	n:74	|Δ|	Sig.	n:68	n:93	|Δ|	Sig.	n:87	n:74	|Δ|	Sig.
H_{1a}	.340	.456	.116	n.s.	.495	.422	.088	n.s.	**.550**	**.295**	**.282**	*	**.589**	**.313**	**.284**	*	.473	.367	.118	n.s.
H_{1b}	.486	.551	.065	n.s.	.601	.470	.129	n.s.	.597	.456	.146	n.s.	.533	.533	.002	n.s.	.444	.546	.103	n.s.
H_{1c}	.244	.024	.268	n.s.	.045	.175	.141	n.s.	-.032	.193	.226	n.s.	-.001	.101	.100	n.s.	**.240**	-.153	**.406**	*
H_{2a}	.359	.159	.200	n.s.	.115	**.341**	**.232**	*	.153	.351	.212	n.s.	.216	.262	.055	n.s.	.313	.184	.131	n.s.
H_{2b}	.157	.192	.035	n.s.	.161	.129	.027	n.s.	.181	.142	.034	n.s.	.271	.113	.144	n.s.	-.002	.270	.293	n.s.
H_{3a}	.419	.567	.148	n.s.	.571	.459	.123	n.s.	.633	.419	.213	n.s.	.479	.546	.059	n.s.	.530	.551	.016	n.s.
H_{3b}	.634	.596	.038	n.s.	**.403**	**.795**	**.387**	*	.563	.622	.040	n.s.	.690	.547	.134	n.s.	.597	.639	.041	n.s.
H_{4a}	**.718**	**.563**	**.155**	*	.590	.665	.087	n.s.	.632	.642	.011	n.s.	.623	.626	.012	n.s.	.670	.551	.126	n.s.
H_{4b}	-.067	-.038	.029	n.s.	-.073	-.011	.064	n.s.	-.029	-.072	.044	n.s.	-.166	.027	.193	n.s.	-.109	.010	.128	n.s.
H_5	-.024	-.094	.069	n.s.	**.265**	**-.314**	**.578**	**	.076	-.17	.228	n.s.	-.038	-.080	.049	n.s.	-.009	-.104	.108	n.s.

5.2 Qualitative Analysis

To better understand participants' answers in the survey, we re-invited them for qualitative feedback. Doing so, we asked each participant to describe in their own words, how the blockchain would affect their perceptions in the outlined scenario. We received 192 answers, which we classified into first, a positive or negative assessment, and second the six categories depicted in Figure 3. These categories were derived by initial screening of all responses individually, then discussed, refined, and,

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finally, applied by two researchers independently. With an average Cohen's Kappa score of .632 across all categories, we achieve a substantial agreement among our raters [69]. Among the answers, stating to perceive an effect (161 total), 39.75% name Security aspects (79.69% positive), 34.16% Trustworthiness (90.91% positive), 10.56% Transparency (all positive), 4.35% Reliability (85.71% positive), and 3.73% Privacy (50% positive). 7,45% state to have not enough knowledge to evaluate a blockchain effect.

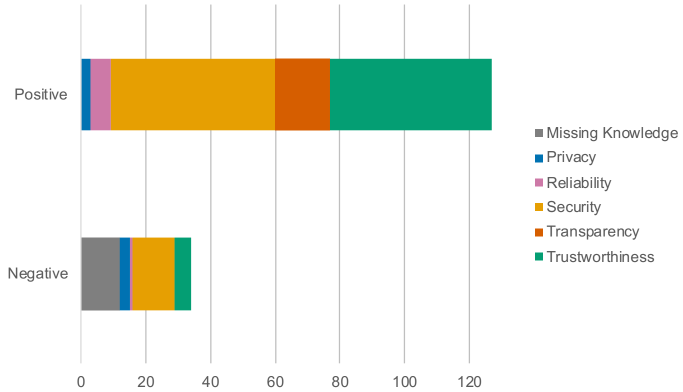

Figure 3. Categorization of participant answers. Categorization was non-exclusive (i.e., each answer can be assigned to multiple categories)

6 Discussion

We conducted an online survey to investigate how the application of blockchain technology in a P2P sharing scenario influences trusting beliefs. While previous research studies the blockchain mainly from a Bitcoin perspective [43–49], we consider the blockchain from a more general perspective as a technological foundation of a sharing platform. To the best of our knowledge, it represents the first study to provide reliable survey-based evidence with a sufficient sample size about the perception of such platforms. By assessing the perceptions of a blockchain-enabled platform, we enable a better understanding of how users evaluate potential transactions and how they are guided by their trust in three substantial targets of trust—peer, platform, and product. Our study contributes to theory and practice by showcasing how established trust relationships are influenced by the application of blockchain technology and by suggesting means how platform providers shall best answer to these influences. Interestingly, we do not find support for four of our hypotheses, from which H_{4b} and H_5 embody well-established relations within the P2P sharing economy and trust literature [16, 70]. A potential explanation for this could be that as soon as a platform ecosystem is based on a trusted and potentially "trust-free" technology, other trust relationships are diminishing in importance, so that trust in the individual transaction partner constitutes no longer an important predictor for the ultimate decision to enter a transaction on the platform. Trust in the facilitating platform run on blockchain technology consequently increases in importance. In this context, users seem to especially value blockchain's security-, trustworthiness-, and transparency-related aspects: "*I would have a higher trust in the sharing platform since I do not have to trust the other users anymore*" [Respondent 107, male, 26].

Thus, we experience a shift from trust in individual transaction partners to trust in platforms. Therefore, the term "trust-free systems" [38] with which the blockchain is frequently associated, fits in so far as trust in the individual seems no longer to be a great matter of concern. Before such a platform landscape can be successfully implemented, trust in the overall blockchain technology must be ensured. In line with our results, there is a substantial effect of trust in blockchain technology on trust in platform. As a consequence, platforms need to build trust in the blockchain technology itself. Interestingly, those effects remain stable, though smaller, even when controlling for experience with the blockchain technology itself, contrasting previous literature describing it as an essential prerequisite [45]. A possible explanation for this is the composition of our participant pool of IS student Millennials—the explicit target group of P2P sharing services and familiar with technological novelties [54–58]. Even though (and in line with the quantitative data of our total sample) participants state that the blockchain *"[...] does not affect the credibility of the offering users"* [Respondent 103, female, 19 years], we find a trust-enhancing effect of trust in blockchain technology for the subgroup with a lower trusting propensity.

Summarizing, platform managers may consider leveraging the blockchain technology to increase the level of trust that users place in the platform. This can particularly affect novel platforms that lack an established user base. Especially here, reputation mechanisms cannot attain their full potential, as they are often subject to the "cold start" problem [71]. This refers to the initial state of either the platform user (or the platform itself), in which few or none transactions are completed, and no reputation can be propagated by common reputation mechanisms (e.g., star ratings, text reviews, profile images). Fostering first transactions would benefit both sides of P2P platform users since it supports them realizing first transactions and build a reputation on the platform. Platform providers should not entirely omit reputation systems, since users may "*still need confirmed reviews by other peers about the 'sharing partner' [...] to trust the other person*" [Respondent 182, female, 21 years]. The combination of blockchain as the underlying technology of a platform with reputation systems could be a viable strategy for platforms for which the blockchain "*will not affect the reliability of the physical products*" [Respondent 100, male, 29 years].

On the other hand, blockchain technology may help established platforms as well. As soon as common reputation mechanisms are devalued by, for instance, inflationary positive assessments [28–33], or a discriminatory use of these [35, 36], trust in the platform and the assurance of further transactions (and thereby the platform's continued existence) could be supported by an underlying blockchain technology.

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7 Limitations & Future Research

Like any study, the present paper faces limitations. First, the decision to enter a transaction on a P2P sharing platform may differ from the statements made within an online survey—with potential external influences. While laboratory studies might create a higher level of internal validity, field experiments might create a higher level of external validity. Next, our sample of undergraduate Millennials lessens the generalizability of our effects. Although this group is particularly relevant for P2P sharing platforms, a broader sample should be considered to derive more general implications. Further, as our research model shows a number of unsupported hypotheses, effects of demographic and trait variables, and a certain amount of unexplained variance, this indicates potential for further influencing factors to be considered. Future research may follow a broader qualitative approach to identify further influencing factors. Last, longitudinal studies are needed to clarify the effects of diminishing trust-enhancing effects for users with blockchain familiarity. The question arises if, in the long run, "*[h]aving information about how Blockchain is working would increase my trust"* [Respondent 30, female, 23 years] or *"Blockchain is just a hype word"* [Respondent 82, female, 26 years]. It this sense, we recommend putting more research efforts into the promising field of trust in blockchain and distributed ledger. This includes investigating real-world use-cases and platforms, which—despite the hype during the last years—still lack notable traction and success.

References

1. Hawlitschek, F.: In Blockchain we trust: Consumer trust relationships in the sharing economy 2.0. In: Wruk, D., Oberg, A., and Maurer, I. (eds.) Perspectives on the Sharing Economy. pp. 148–155. Cambridge Scholar Publishing (2019).
2. Sundararajan, A.: The sharing economy: The end of employment and the rise of crowd-based capitalism. MIT Press, Cambridge (2016).
3. Van Alstyne, M., Parker, G., Choudary, S.P.: Pipelines, platforms, and the new rules of strategy. Harv. Bus. Rev. 94, 54–63 (2016).
4. Hodapp, D., Hawlitschek, F., Kramer, D.: Value Co-Creation in Nascent Platform Ecosystems: A Delphi Study in the Context of the Internet of Things. In: ICIS 2019 Proceedings. pp. 1–17 (2019).
5. Dann, D., Teubner, T., Weinhardt, C.: Poster child and guinea pig—Insights from a structured literature review on Airbnb. Int. J. Contemp. Hosp. Manag. 31, (2019).
6. Frenken, K., Schor, J.: Putting the sharing economy into perspective. Environ. Innov. Soc. Transitions. 23, 3–10 (2017).
7. European Commission: A European agenda for the collaborative economy. Commun. from Comm. to Eur. Parliam. Counc. Eur. Econ. Soc. Comm. Comm. Reg. (2016).
8. AirbnbHell: AirbnbHell: uncensored Airbnb stories from hosts and guests, https://www.airbnbhell.com/.
9. Gebbia, J.: How Airbnb Designs for Trust, (2016).
10. Hawlitschek, F., Teubner, T., Weinhardt, C.: Trust in the Sharing Economy. Die

https://doi.org/10.30844/wi_2020_n2-dann

Unternehmung. 70, 26–44 (2016).
11. Möhlmann, M., Geissinger, A.: Trust in the sharing economy: Platform-mediated peer trust. In: Handbook on the Law of the Sharing Economy. Cambridge University Press (2018).
12. Hawlitschek, F., Teubner, T., Adam, M.T.P., Borchers, N., Möhlmann, M., Weinhardt, C., Moehlmann, M., Weinhardt, C.: Trust in the Sharing Economy: An Experimental Framework. In: ICIS 2016 Proceedings. pp. 1–14 (2016).
13. Möhlmann, M.: Digital trust and peer-to-peer collaborative consumption platforms: A mediation analysis. Work. Pap. (2016).
14. Söllner, M., Hoffmann, A., Leimeister, J.M.: Why different trust relationships matter for information systems users. Eur. J. Inf. Syst. 25, 274–287 (2016).
15. Hamari, J., Sjöklint, M., Ukkonen, A.: The sharing economy: Why people participate in collaborative consumption. J. Assoc. Inf. Sci. Technol. 67, 2047–2059 (2016).
16. Hawlitschek, F., Notheisen, B., Teubner, T.: The limits of trust-free systems: A literature review on blockchain technology and trust in the sharing economy. Electron. Commer. Res. Appl. 29, 50–63 (2018).
17. Seebacher, S., Schüritz, R.: Blockchain Technology as an Enabler of Service Systems: A Structured Literature Review. In: Proceedings of the 2017 International Conference on Exploring Services Science. pp. 12–23. , Cham (2017).
18. Beck, R.: Beyond Bitcoin: The Rise of Blockchain World. Computer (Long. Beach. Calif). 51, 54–58 (2018).
19. Lundy, L.: Blockchain and the sharing economy 2.0, https://www.ibm.com/developerworks/library/iot-blockchain-sharing-economy/index.html.
20. Glaser, F.: Pervasive Decentralisation of Digital Infrastructures : A Framework for Blockchain enabled System and Use Case Analysis. In: HICSS 2017 Proceedings. pp. 1543–1552 (2017).
21. Bolton, G.E., Katok, E., Ockenfels, A.: Trust among Internet Traders: A Behavioral Economics Approach. Work. Pap. Ser. Econ. 5, (2004).
22. Hawlitschek, F., Teubner, T., Gimpel, H.: Understanding the sharing economy—Drivers and impediments for participation in peer-to-peer rental. In: HICSS 2016 Proceedings. pp. 4782–4791 (2016).
23. Jones, K., Leonard, L.N.K.: Trust in consumer-to-consumer electronic commerce. Inf. Manag. 45, 88–95 (2008).
24. Teubner, T.: The web of host–guest connections on Airbnb: a network perspective. J. Syst. Inf. Technol. 20, 262–277 (2018).
25. Einav, L., Farronato, C., Levin, J.: Peer-to-peer markets. Annu. Rev. Econom. 8, 615–635 (2015).
26. Weber, T.A.: Intermediation in a Sharing Economy: Insurance, Moral Hazard, and Rent Extraction. J. Manag. Inf. Syst. 31, 35–71 (2014).
27. Nesta: The titans of the sharing economy meet their match, http://www.nesta.org.uk/2016- predictions/titans-sharing-economy-meet-match.
28. Teubner, T., Dann, D.: How platforms build trust. (2018).
29. Ert, E., Fleischer, A., Magen, N.: Trust and reputation in the sharing economy: The role of personal photos in Airbnb. Tour. Manag. 55, 62–73 (2016).

https://doi.org/10.30844/wi_2020_n2-dann

30. Ke, Q.: Sharing Means Renting?: An Entire-marketplace Analysis of Airbnb. In: Proceedings of the 2017 ACM on Web Science Conference. pp. 131–139 (2017).
31. Slee, T.: Some obvious things about internet reputation systems. Work. Pap. (2013).
32. Zervas, G., Proserpio, D., Byers, J.: A First Look at Online Reputation on Airbnb, Where Every Stay is Above Average. (2015).
33. Bridges, J., Vásquez, C.: If nearly all Airbnb reviews are positive, does that make them meaningless? Curr. Issues Tour. 21, 2057–2075 (2018).
34. Karlsson, L., Kemperman, A., Dolnicar, S.: May I sleep in your bed? Getting permission to book. Ann. Tour. Res. 62, 1–12 (2017).
35. Edelman, B.G., Luca, M.: Digital discrimination: The case of Airbnb.com. (2014).
36. Edelman, B., Luca, M., Svirsky, D.: Racial Discrimination in the Sharing Economy: Evidence from a Field Experiment. Am. Econ. J. Appl. Econ. 9, 1–34 (2017).
37. The Economist: The trust machine, https://www.economist.com/leaders/2015/10/31/the-trust-machine.
38. Greiner, M., Wang, H.: Trust-free Systems - a New Research and Design Direction to Handle Trust-Issues in P2P Systems: The Case of Bitcoin. In: AMCIS 2015 Proceedings (2015).
39. Beck, R., Müller-Bloch, C., King, J.L.: Governance in the Blockchain Economy : A Framework and Research Agenda A Framework and Research Agenda. J. Assoc. Inf. Syst. 19, 1020–1034 (2018).
40. Risius, M., Spohrer, K.: A Blockchain Research Framework. Bus. Inf. Syst. Eng. 59, 1–6 (2017).
41. Puschmann, T., Alt, R.: Sharing Economy. Bus. &}Information Syst. Eng. 58, 93–99 (2016).
42. Notheisen, B., Hawlitschek, F., Weinhardt, C.: Breaking Down the Blockchain Hype – Towards a Blockchain Market Engineering Approach. In: ECIS 2017 Proceedings (2017).
43. Auinger, A., Riedl, R.: Blockchain and trust: Refuting some widely-held misconceptions. In: ICIS 2018 Proceedings. pp. 1–9 (2018).
44. Sas, C., Khairuddin, I.E.: Exploring Trust in Bitcoin Technology: A Framework for HCI Research. In: Proceedings of the 2015 Annual Meeting of the Australian Special Interest Group for Computer Human Interaction. pp. 338–342 (2015).
45. Ahangama, S., Poo, D.C.C.: Credibility of Algorithm Based Decentralized Computer Networks Governing Personal Finances: The Case of Cryptocurrency. In: Proceedings of the 2016 International Conference on HCI in Business, Government, and Organizations. pp. 165–176 (2016).
46. Zarifis, A., Cheng, X., Dimitriou, S., Efthymiou, L.: Trust in Digital Currency Enabled Transactions Model. In: MCIS 2015 Proceedings. pp. 363–370 (2015).
47. Connolly, A.J., Kick, A.: What differentiates early organization adopters of Bitcoin from non-adopters? In: AMCIS 2015 Proceedings. pp. 1–6 (2015).
48. Ingram, C., Morisse, M.: Almost an MNC: Bitcoin entrepreneurs' Use of collective resources and decoupling to build legitimacy. In: HICSS 2016 Proceedings. pp. 4083–4092. IEEE (2016).
49. Ingram, C.E., Morrisse, M., Teigland, R.: "A bad apple went away": Exploring resilience among bitcoin entrepreneurs. In: ECIS 2016 Proceedings. pp. 1–11 (2016).

https://doi.org/10.30844/wi_2020_n2-dann

50. Tumasjan, A., Beutel, T.: Blockchain-Based Decentralized Business Models in the Sharing Economy: A Technology Adoption Perspective. In: Treiblmaier, H. and Beck, R. (eds.) Business Transformation through Blockchain: Volume I. pp. 77–120. Springer International Publishing, Cham (2019).
51. Mehrwald, P., Treffers, T., Titze, M., Welpe, I.: Blockchain Technology Application in the Sharing Economy: A Proposed Model of Effects on Trust and Intermediation. In: HICSS 2019 Proceedings. pp. 4585–4594 (2019).
52. Teubner, T., Hawlitschek, F., Adam, M.T.P.: Reputation transfer. Bus. Inf. Syst. Eng. 61, 229–235 (2019).
53. Bock, O., Baetge, I., Nicklisch, A.: hroot: Hamburg Registration and Organization Online Tool. Eur. Econ. Rev. 71, 117–120 (2014).
54. Godelnik, R.: Millennials and the sharing economy: Lessons from a 'buy nothing new, share everything month' project. Environ. Innov. Soc. Transitions. 23, 40–52 (2017).
55. Ranzini, G., Newlands, G., Anselmi, G., Andreotti, A., Eichhorn, T., Etter, M., Hoffmann, C.P., Jürss, S., Lutz, C.: Millennials and the Sharing Economy: European Perspectives. SSRN Electron. J. (2017).
56. European Union: Exploratory study of consumer issues in online peer-to-peer platform markets, (2017).
57. PwC: The Sharing Economy. Consum. Intell. Ser. 1–30 (2015).
58. Akbar, P., Mai, R., Hoffmann, S.: When do Materialistic Consumers Join Commercial Sharing Systems. J. Bus. Res. 69, 4215–4224 (2016).
59. Dohmen, T., Falk, A., Huffman, D., Sunde, U., Schupp, J., Wagner, G.G.: Individual risk attitudes: Measurement, determinants, and behavioral consequences. J. Eur. Econ. Assoc. 9, 522–550 (2011).
60. Gefen, D.: E-commerce: the role of familiarity and trust. Omega. 28, 725–737 (2000).
61. Hair, J.F.J., Hult, G.T.M., Ringle, C.M., Sarstedt, M.: A Primer on Partial Least Squares Structural Equation Modeling. Sage Publications, New York (2016).
62. Gefen, D., Straub, D.W., Rigdon, E.E.: An Update and Extension to SEM Guidelines for Administrative and Social Science Research. MIS Q. 35, iii–xiv (2011).
63. Cohen, J.: A power primer. Psychol. Bull. 112, 155–159 (1992).
64. Hair, J.F., Ringle, C.M., Sarstedt, M.: PLS-SEM: Indeed a Silver Bullet. J. Mark. Theory Pract. 19, 139–152 (2011).
65. Fornell, C., Larcker, D.F.: Evaluating structural equation models with unobservable variables and measurement error. J. Mark. Res. 18, 39–50 (1981).
66. Ringle, C.M., Wende, S., Becker, J.-M.: SmartPLS 3, http://www.smartpls.com.
67. Henseler, J., Ringle, C.M., Sinkovics, R.R.: The Use of Partial Least Squares Path Modeling in International Marketing. Adv. Int. Mark. 20, 277–319 (2009).
68. Cohen, J.: Statistical Power Analysis for the Behavioral Sciences. Lawrence Erlbaum Associates, Mahwah (1988).
69. Landis, J.R., Koch, G.G.: The Measurement of Observer Agreement for Categorical Data. Biometrics. 33, 159–174 (1977).
70. ter Huurne, M., Ronteltap, A., Corten, R., Buskens, V.: Antecedents of trust in the sharing economy: A systematic review. J. Consum. Behav. 16, 485–498 (2017).
71. Wessel, M., Thies, F., Benlian, A.: Competitive Positioning of Complementors on Digital Platforms: Evidence from the Sharing Economy. In: ICIS 2017 Proceedings.

https://doi.org/10.30844/wi_2020_n2-dann

pp. 1–18 (2017).
72. Lu, Y., Zhao, L., Wang, B.: From virtual community members to C2C e-commerce buyers: Trust in virtual communities and its effect on consumers' purchase intention. Electron. Commer. Res. Appl. 9, 346–360 (2010).

Appendix

Table 4. Applied measurement scales in the research model and outer loadings

Construct	Code	Items (adapted)	loading/ weight
Trust in Blockchain (*formative*) [14]	TBL1	I feel good about how things go when doing activities on the Blockchain.	.543
	TBL2	I feel assured that legal and technological structures adequately protect me from problems on the Blockchain.	.653
Trust in Blockchain User (*formative*) [14]	TBU1	Information provided by other users of the Blockchain is valuable. (dropped)	.145†
	TBU2	Other users of the Blockchain offer me help when I have questions.	.341
	TBU3	In general, I can count on the information provided by other Blockchain users.	.859
Trust in Platform (*reflective*) [11]	TPL1	As a platform provider, Slock.it can be trusted at all times.	.756
	TPL2	As a platform provider, Slock.it can be counted on to do what is right.	.805
	TPL3	As a platform provider, Slock.it has high integrity.	.834
	TPL4	Slock.it is a competent platform provider.	.826
Trust in Peers (*reflective*) [11]	TPE1	The peers on the Slock.it platform are in general dependable.	.611
	TPE2	The peers on the Slock.it platform are in general reliable.	.852
	TPE3	The peers on the Slock.it platform are in general honest.	.825
	TPE4	The peers on the Slock.it platform are in general trustworthy.	.880
Trust in Product (*reflective*) [10]	TPR1	In general, the products on the Slock.it platform will fulfill their tasks reliably.	.812
	TPR2	In general, you will rarely experience nasty surprises with the products on the Slock.it platform.	.683
	TPR3	In general, the products booked on the Slock.it platform will not break down during use.	.684
	TPR4	In general, the products on the Slock.it platform will not have defective parts.	.741
Intention to Rent (*reflective*) [72]	INR1	Given the chance, I would consider renting products from the Slock.it platform in the future.	.930
	INR2	It is likely that I will actually rent products on the Slock.it platform in the near future.	.879
	INR3	Given the opportunity, I intend to rent products on the Slock.it platform.	.940

Note: † initial loading for items removed in the course of measurement model evaluation.