

# STUDY 2: Explaining Reward Crowdfunding Backers' Intentions and Behaviors

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Published in *Baltic Journal of Management*

## Abstract

**Purpose** – Earlier research into crowdfunding adoption has drawn on social psychology, trust, signaling, and well-being theories. Despite its wide appeal and use, the Technology Acceptance Model (TAM) has received little attention in terms of explaining the adoption of crowdfunding platforms. The current study examines the applicability of two versions of this framework: the original TAM1 and the extended TAM2 frameworks.

**Design/methodology/approach** – Data were collected through a survey distributed to the users of Finland's leading reward crowdfunding website, Mesenaatti, who have backed crowdfunding campaigns previously. We employed structural equation modelling (SEM–lavaan package) and conducted a series of quality tests to alleviate concerns with certain biases.

**Findings** – Analyses of 556 observations show support for all of the hypotheses that underlie both TAM frameworks, with two exceptions. Contrary to expectations, voluntariness does not moderate the effect of subjective norms on contribution intentions, and the effect of perceived ease-of-use is primarily mediated by perceived usefulness, rather than directly influencing intentions.

**Originality/value** – First, our study extends the generalizability of TAM to the context of crowdfunding, and with respect to financial contribution behavior. Second, it shows that backers' perceptions of platform usefulness and ease-of-use are important antecedents of crowdfunding contribution behavior, and that the former exerts greater influence than the latter. Third, it further clarifies the influences of relevant antecedents of crowdfunding backers' contribution intentions and behaviors. Specifically, we show that experience only weakly moderates the influence of subjective norms on contribution intentions, and voluntariness does not moderate this association. We discuss explanations for these findings and their implications for research and practice.

**Keywords** – Crowdfunding, technology acceptance model, intentions, behavior, usefulness, structural equation modelling

**Acknowledgements** – The author would like to thank Prof. Rotem Shneor, Dr. Ziaul H. Munim, Dr. Samuel Anokye Nyarko, the UiA Crowdfunding Research Centre and the anonymous reviewers for their constructive feedbacks.

## 1. Introduction

Reward crowdfunding is a project fundraising mechanism in which backers provide financial support in return for non-monetary tangible and/or intangible rewards. In this respect, it resembles e-commerce, with two clear distinctions. First, reward crowdfunding often engages in pre-sales of unfinished products rather than finished ones and involves the risk of non-delivery or delivery of outcomes diverging from original promises stated in the fundraising campaign (Shneor and Torjesen, 2020). Nevertheless, the ability of reward crowdfunding to support market approval, awareness creation, promotional reach, idea testing, and communal concept development (Nucciarelli et al., 2017; Mollick and Kuppuswamy, 2014) makes it the “model that the general public is most familiar with when discussing crowdfunding activities” (Ziegler et al., 2020). Unsurprisingly, research into the phenomenon has grown, with increasing focus on what influences backers’ contribution behavior (Short et al., 2017).

One group of researchers has built on social psychology by employing the *theory of planned behavior*, while highlighting the cognitive antecedents underlying backer intentionality and behavior (e.g., Shneor and Munim, 2019; Baber, 2022; Shneor et al., 2021). Also, considering the threat of moral hazard, hidden information problems, and the private cost of information related to crowdfunding (Strausz, 2017; Belleflamme et al., 2015; Deng et al., 2022; Miglo, 2022), a second group has mostly employed signaling theory, viewing it as a mechanism for limiting information asymmetry between backers and fundraisers in backers’ decision making (e.g., Kleinert et al., 2020; Steigenberger and Wilhelm, 2018; Tajvarpour and Pujari, 2022) and enhancing effective persuasion (e.g., Bi et al., 2017; Anglin et al., 2018). A third group has argued that backers’ engagement in crowdfunding depends on the extent to which such actions are congruent with the enhancement of their *well-being* (Sherman and Axelrad, 2020; Efrat et al., 2021). A fourth group has built on *trust-theory* as a mechanism for unlocking resources in the community by highlighting campaign features, user interactions, and community dynamics that enhance trusting relations (e.g., Kang et al., 2016; Chen et al., 2014; Alharbey and Van Hemmen, 2021; Liang et al., 2019; Baah-Peprah and Shneor, 2022).

As consumers' buying behaviors on e-commerce platforms are dependent on their acceptance of the platform technology (Pavlou, 2003), the current study examines; what drives the adoption of crowdfunding platforms? More specifically, we explore whether backers' contribution behavior, as evidence of acceptance, will depend on known antecedents as outlined by the TAM frameworks? Several studies have emphasized the importance of crowdfunding platforms (Odorović and Wenzlaff, 2020; Deng et al., 2022) as one of the three main actors in crowdfunding process, and the providers of the 'rules of the game' for backers and entrepreneurs (Maehle, 2020), as well as enacting codes of conduct (Odorović and Wenzlaff, 2020) and ensuring due diligence (Belleflamme et al., 2015).

Earlier research by Hoegen et al. (2018) confirmed that platform context – that is, the affordances, general features, and functionality of the platform (including which and how campaigns are visually presented to the potential investors) – affects the flow of backers' contribution processes. Furthermore, evidence from various lenses including sustainability and cultural and arts sectors confirms that the choice of crowdfunding platform as funding technology by a fund-seeker is more complex (Maehle, 2020; Rykkja et al., 2020) and should not be based on intuitions (Baah-Peprah and Shneor, 2022) as these platforms ultimately influence behaviors (Odorović and Wenzlaff, 2020), such as backers' contribution behaviors on the platform (Ordanini, Miceli, Pizzetti, & Parasuraman, 2011). Also, other theoretical papers intuiting relationships between certain variables and crowdfunding acceptance lack empirical support and most have not been tested directly (Miglo, 2022)

Despite this, the few studies that have looked at the acceptance of crowdfunding, notably reward crowdfunding, have received less attention and have only examined a few components of the technology acceptance model, while potentially underestimating relevant variables' influence (e.g., Djimesah et al., 2022). Therefore, it is valuable to find out whether backers' contribution intentions and behaviors in reward crowdfunding are dependent on their acceptance of crowdfunding platforms.

To fill this gap, we aimed to examine a more elaborate version of the Technology Acceptance Model (Venkatesh and Davis, 2000; Davis et al., 1989) (hereafter 'TAM') for

predicting reward crowdfunding contribution intentions and behavior. We conducted our analyses based on survey data collected from 556 registered users on Finland's leading reward crowdfunding platform: Messenatti.me. We employed structural equation modelling (SEM- lavaan package) and conducted a series of quality tests to alleviate concerns with various biases, followed by a report of our findings.

This study offers three main contributions. First, it solidifies our understanding and extends the generalizability of TAM in the context of crowdfunding, and with respect to financial contribution behavior more generally. Second, it shows that backers' perceptions of platform usefulness and ease-of-use are important antecedents of financial contribution behavior, and the former exerts greater influence than the latter. Third, it further clarifies the influences of relevant antecedents of crowdfunding backers' contribution intentions and behaviors. Specifically, it shows that subjective norms are only weakly associated with intentions, and that voluntariness does not moderate this association. We then discuss explanations for these findings, uniquely anchored in the Finnish context.

The remainder of the paper is structured as follows. First, we present current research in crowdfunding backer intentions and behavior, and then outline a series of hypotheses emerging from the application of the TAM to the reward crowdfunding context. We then present the methodological approach and the results of the analyses. These are discussed in light of earlier research, and explanations for both expected and surprising findings are suggested. We conclude by highlighting the contributions, limitations, and implications of the findings.

## **2. Literature Review**

A growing body of literature has examined what drives contribution intentionality and behavior in crowdfunding. Some studies have highlighted the role of cognitive antecedents of favorable attitudes, perceived behavior control, self-efficacy, subjective norms, and social norms as underlying crowdfunding contribution intentionality and behavior (e.g., Shneor and Munim, 2019; Baber, 2022; Shneor et al., 2021). Other studies have focused on identifying the role of intrinsic and extrinsic motivations (e.g., Baber and

Fanea-Ivanovici, 2021; Allison et al., 2015; Bretschneider and Leimeister, 2017), with some focusing specifically on enhancement of well-being (Sherman and Axelrad, 2020; Efrat et al., 2021).

Furthermore, incorporating the threat of moral hazard, hidden information problems and private cost of information and how they influence potential backers' contribution decisions in crowdfunding (Strausz, 2017; Belleflamme et al., 2015; Deng et al., 2022), other studies have stressed the importance of mitigating risk by identifying signals that are effective at narrowing the information asymmetry between backers and fundraisers in backers' decision-making processes (e.g., Kleinert et al., 2020; Steigenberger and Wilhelm, 2018; Kunz et al., 2017; Tajvarpour and Pujari, 2022), and the use of effective signals in persuasion (e.g., Anglin et al., 2018; Bi et al., 2017). Others have traced the role of trust in unlocking resources within crowdfunding communities of backers, by examining related campaign features, user interactions, and dynamics that are congruent with the enhancement of trusting relations (e.g., Kang et al., 2016; Chen et al., 2014; Alharbey and Van Hemmen, 2021; Liang et al., 2019; Baah-Peprah and Shneor, 2022).

However, even when a campaign is diligently designed and the fundraiser is trusted by potential backers, the choice of crowdfunding platform becomes a relevant factor in influencing backer's contribution intentionality and behavior. That is, a platform can have both positive and negative influences on a backer's contribution intentions (Lacan and Desmet, 2017). Earlier literature reviews have identified several platform characteristics as critical for campaign success (Kartemo, 2017; Shneor and Vik, 2020). These include aspects such as platform design, governing policies, and other hidden platform affordances that influence campaign success (Ordanini et al., 2011; Burtch et al., 2013). Relevant designs and affordances have been studied in various contexts within the IT domain (Davis et al., 1989), while drawing on concepts from psychology and human behavior (Koufaris, 2002). Such approaches use current online dynamics to explain and shape website usage and customer behaviors (Pavlou, 2003). In this context, the acceptance of crowdfunding platforms as a technology for facilitating fundraising of new ventures, as driven by a platform's perceived-ease-of-use and usefulness, is expected to impact backers' contribution intentions and behaviors. Therefore, we present a series

of hypotheses suggesting how TAM explains backers' financial contribution intentions and behaviors in crowdfunding.

### *2.1. Technology Acceptance Model*

The TAM models have been thoroughly studied and verified in a large variety of information systems contexts, as documented in several comprehensive literature reviews and meta-analyses (Marangunić and Granić, 2015; Yousafzai et al., 2007b; Yousafzai et al., 2007a). However, their application for understanding backer intentions and behavior in crowdfunding has been limited. Some exceptions involve the use of the original and limited TAM model (Djimesah et al., 2022). At the most fundamental level, the original TAM model (hereafter 'TAM 1') postulates that there are two critical factors that positively affect an individual's acceptance of an information service system: their perceptions about the ease-of-use and usefulness of the system (Davis et al., 1989). Furthermore, TAM also suggests that perceived-ease-of-use positively affects the perceived-usefulness of the information system. Accordingly, it has been suggested that beliefs about ease-of-use and usefulness have a direct effect on the intention to use the crowdfunding platform. Finally, TAM assumes that the effect of perceived ease-of-use on intentions to use a crowdfunding platform is mediated by the perceived usefulness of the system. Accordingly, we hypothesized that:

H1: A backers' perceived ease-of-use of a crowdfunding platform positively influences their (a) perceived usefulness of a platform, and (b) intention to make a financial contribution to a campaign.

H2: A backer's perceived usefulness of a crowdfunding platform (a) positively influences their intention to make a financial contribution to a campaign, and (b) mediates the relationship between the backer's perceived ease-of-use of the platform and a backer's financial contribution intention.

Furthermore, a plethora of conceptual and empirical TAM-related studies confirmed the significant relationship between individuals' intention and their actual behaviors (Davis et al., 1989; Venkatesh and Davis, 2000; Pavlou, 2003). Such confirmation of the association between intentions and behaviors was also achieved in studies using alternative frameworks, such as the theory of planned behavior in varying context and settings (Ajzen, 2011), as well as specifically in the context of reward crowdfunding (e.g., Shneor and Munim, 2019; Shneor et al., 2021). Accordingly, we hypothesize that:

H3: A backer's financial contribution intention positively influences their financial contribution behavior.

Further expanding the basic TAM model by incorporating its antecedents, Venkatesh and Davis (2000) accounted for both social influence processes (subjective norms, experience, voluntariness, and image) and cognitive instrumental processes (task relevance, output quality, result demonstrability) in their extended understanding of the drivers behind perceived usefulness and perceived ease-of-use, and how they affect usage intention and behavior. This extended model is hereafter referred to as 'TAM 2'.

### ***2.1.1. Cognitive Instrumental Processes***

TAM 2 posits that when an individual can readily discern the positive results of using a system, the system is considered to be enhancing the ability to demonstrate the results of its use (Moore and Benbasat, 1991), and hence enhancing the system's perceived usefulness. In the context of crowdfunding, platforms that make campaign results easy to monitor, understand, and share with others are likely to be considered as more useful by prospective backers for their decision making and social information sharing efforts. Previous research has shown that the behavior of crowdfunding backers was affected by the status of campaign goal achievement at the time of consideration (Colombo et al., 2015), which can sometimes escalate into herding behavior (Clauss et al., 2018; Belleflamme et al., 2015), as well as reverse herding behavior (Zaggl and Block, 2019). Accordingly, we hypothesize that:

H4: Result demonstrability of a crowdfunding platform positively influences a backer's perceived usefulness of the platform.

Moreover, the perceived degree of applicability of the system to an individual's task-related goals impacts their perceptions about the usefulness of the system (Venkatesh and Davis, 2000). Beach and Mitchell (1978) posited that systems that are judged not to be task-relevant are eliminated from one's pool of options, and systems that are compatible with the task are selected. While earlier research has not examined the influences of task relevance directly in a crowdfunding context, it has been viewed through the lenses of backers' wellbeing, where thoughts on the positive functioning, meaningful activities, and achievable goals attained by backers through crowdfunding are considered to be relevant elements that influence backers' contribution decisions (Efrat et al., 2021). Accordingly, we hypothesize that:

H5: Task relevance of a crowdfunding platform positively influences a backer's perceived usefulness of the platform.

In addition to how task-relevant a system is, its output quality – that is, incorporating an individual's perception of how well the system performs a task – also affects the perceived usefulness of the system (Venkatesh and Davis, 2000). In the crowdfunding context, a platform must be regarded as providing quality services for prospective backers. If the services that a crowdfunding platform provides are viewed as insufficient or of lower quality in terms of ensuring transaction integrity, privacy protections, quality checks of onboarded campaigns, and timely information provisioning, backers may opt for alternative payment channels such as direct transfers or other digital payment solutions. Again, while earlier research has not directly examined the influences of output quality directly, some studies have highlighted the related aspects of platform trustworthiness (Ferreira et al., 2022), which may result from high degrees of output quality, finding trustworthiness to be positively associated with backer intentions (Alharbey and Van Hemmen, 2021) and behaviors (Zhang et al., 2020). Accordingly, we hypothesize that:

H6: Output quality of a crowdfunding platform positively influences a backer's perceived usefulness of the platform.



### *2.1.2. Social Influence Processes*

Social interactions, including pressures, generally affect engagement in online transactions (Algesheimer et al., 2005). In crowdfunding, encouraging one's close social circle to engage in crowdfunding contribution has been found to be positively associated with their own contribution behaviors in a variety of social contexts (Bretschneider and Leimeister, 2017; Renwick and Mossialos, 2017; Shneor and Munim, 2019; Shneor et al., 2021). Furthermore, since crowdfunding engagement protrudes congruency with social preferences (Shneor and Munim, 2019), the more favorable subjective norms towards crowdfunding are, the more useful crowdfunding platforms are perceived to be for backers, who wish to behave in ways that are congruent with their social environments' preferences.

While earlier TAM research in a crowdfunding context has not examined the direct and indirect influences of subjective norms on perceived platform usefulness and backer's contribution intention, respectively (Djimesah et al., 2022; Bakri et al., 2021; Kazaure et al., 2020), a core proposition of Venkatesh and Davis' (2000) extended TAM model is that subjective norms influences perceived usefulness directly and can influence intention indirectly through perceived usefulness. Through a process of internalization, a system is perceived as useful when a person believes in a referent (a significant other in their social context), incorporates the referent's belief into his or her own belief structure, and, in turn, forms an intention to use the system (Venkatesh and Davis, 2000; Venkatesh and Bala, 2008). Accordingly, we hypothesize that:

H7: Favorable subjective norms positively influence a backer's (a) financial contribution intention, and (b) perceived usefulness of a crowdfunding platform.

H8: A backer's perceived usefulness of a crowdfunding platform mediates the relationship between favorable subjective norms and a backer's contribution intention.

Additionally, image/recognition – “the degree to which the use of an innovation is perceived to enhance one's ... status in a social system” (Moore and Benbasat, 1991) – is affected by subjective norms and such an image affects the perceived usefulness of the innovation (Venkatesh and Davis, 2000; Venkatesh and Bala, 2008). Image is postulated to be the other social influence factor, in addition to subjective norm, that influences the

perceived usefulness of a system (Venkatesh and Bala, 2008; Davis et al., 1989; Venkatesh and Davis, 2000). Furthermore, in new systems adoption, personality recognition dimensions influences system usefulness (Saeed and Abdinnour-Helm, 2008; Godoe and Johansen, 2012). In a crowdfunding context, previous studies have not focused on how the image of backers influences their perception of crowdfunding platform usefulness, although earlier research has shown that expectation of recognition from others was one of the motivations for backers participating in crowdfunding projects (Bretschneider and Leimeister, 2017) and ‘being seen to care’ was a motivator for backer engagement in prosocial crowdlending (Cox et al., 2018). Accordingly, we hypothesize that:

H9: Subjective norms positively influence backer’s image.

H10: Backer’s image (a) positively influences their perceived usefulness of crowdfunding a platform; and (b) mediates the relationship between subjective norms and backer’s perceived usefulness of a crowdfunding platform.

### ***2.1.3. Moderating Roles of User Experience and Voluntariness***

Normative pressure attenuates over time (Ram and Jung, 1991) with experience gained by users over a duration of time in which systems are implemented. Concrete sensory information (Doll and Ajzen, 1992), supplants reliance on social pressure, and cognitive evaluations are enhanced (Fazio and Zanna, 1981). Therefore, the significant effect of subjective norms on new system adoption becomes non-significant over time (Hartwick and Barki, 1994). Research documents herding in crowdfunding (Anglin et al., 2018; Mollick and Nanda, 2016; Vismara, 2016), which may be symptomatic of social influence in early adoption stages. This suggests that the contribution intentions of novel crowdfunding backers may rely more on the opinions and encouragement from others than their own judgement. However, while an introduction to crowdfunding may follow encouragement from peers, long-term and repeated engagement is influenced less by social cues and more by other aspects such as own interest in the project, and prior experiences with crowdfunding. Accordingly, we hypothesize:

H11: A backer's crowdfunding experience will negatively moderate the positive influence of subjective norms on (a) their financial contribution intention and (b) the perceived usefulness of a crowdfunding platform.

Finally, Venkatesh and Davis (2000), Hartwick and Barki (1994), and (Venkatesh and Bala, 2008) found that subjective norms had a significant effect on intentions in mandatory settings, but not in voluntary settings. In a voluntary context, and defining voluntariness as “the extent to which potential adopters of a system perceive the adoption decision to be non-mandatory” (Venkatesh and Davis, 2000), the association between subjective norms and potential adopters' intention attenuates (Venkatesh and Bala, 2008; Venkatesh and Davis, 2000). While contributions to reward crowdfunding campaigns do not constitute mandatory settings, they are subject to community norms of reciprocity, which may impose a form of informal sense of obligation. Here, an entrepreneur's social ties and reciprocity obligations to fund other entrepreneurs had significant effects on crowdfunding performance in China and the US, as shown in Zheng et al. (2014). Similarly, in Europe, André et al. (2017) analyzed more than 3000 reward-based crowdfunding campaigns, finding that their success relied on reciprocal giving where a prior fund-receiver feels obligated to support others who contributed to their project in the past. Accordingly, we hypothesize that:

H12: Voluntariness will negatively moderate the positive influence of subjective norms on a backer's financial contribution intention.

In conclusion, all hypotheses are conceptually depicted in our research model in Figure 1.

### **3. Methods**

#### ***3.1. Study Context and Data Collection***

Data were collected from users registered on Mesenaatti.me in Finland. The Finnish crowdfunding market is an interesting context for our study due to the country's ranking in terms of crowdfunding volumes for past years (ranked eighth and seventh in alternative finance volumes per capita globally with USD 68.7 million and 70.42 million in 2018 and 2020, respectively) and its crowdfunding regulatory friendliness (one of the few European

pioneers to introduce crowdfunding specific regulations, with the Crowdfunding Act passed in parliament in 2016) (Ziegler et al., 2020). At a regional level, Finland is the leader of crowdfunding volumes in the Scandinavian crowdfunding market, accounting for 46 percent of Nordic crowdfunding volume growth in 2020 (Ziegler et al., 2020).

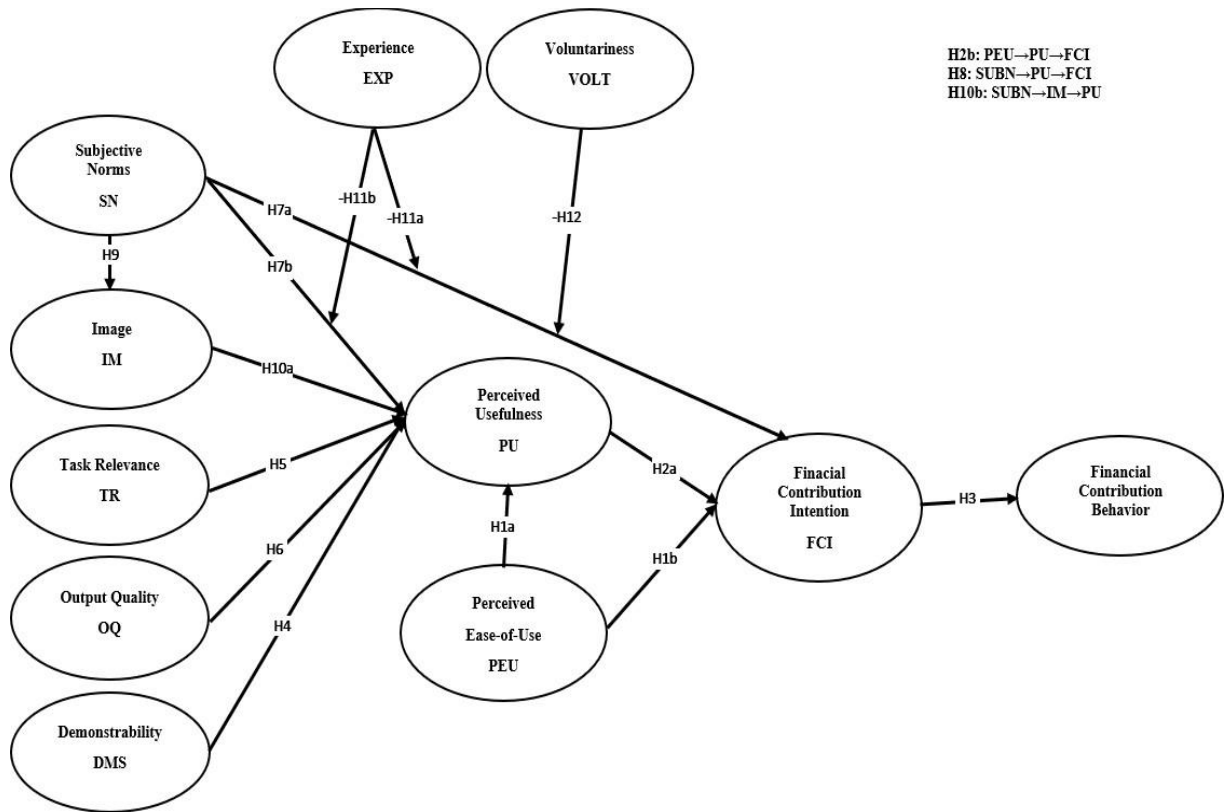


Figure 1: Research Model (summary of hypotheses)

We chose Mesenaatti.me due to its reputation as Finland’s largest reward crowdfunding platform catering to a wide variety of sectors, and particularly in culture and arts production, consumer goods, food and beverages, simpler software and app development, as well as retail. Established in 2013, the platform had, at the time of data collection in 2016, over 25,000 users and had overseen fundraising of over EUR 3 million with minimum amount requested per campaign ranging between EUR 1,000 and 50,000. The platform primarily targets Finnish audiences. Nevertheless, the platform’s interface is in both Finnish and English and some campaigns were also available in English when fundraisers were interested in international support or when initiated by immigrants. Our

survey included a list of questions available in English and Finnish. The first translation was made by a professional agency, the final version was the one revised by the platform managers to ensure fit with context specific jargon and terminology. Items were rated on a seven-point Likert-type scale ranging from 1 (“completely disagree with the statement”) to 7 (“completely agree with the statement”). To boost participation, respondents were offered lottery gift cards as an incentive for providing their responses.

Notably, as crowdfunding backers are often not able to judge the quality of platforms’ services before their usage of the platform (Odorović and Wenzlaff, 2020), our data were collected mostly from backers who have contributed to crowdfunding campaigns before, where contribution was measured based on backer’s total amount contributed over all campaigns in the past year. Observations with missing data or those suspected of monotonous response bias were removed from the dataset. To ensure that our survey did not suffer from non-response bias, we split the sample between early and late responders and found no significant differences with respect to several background variables, including age, sex, time spent on online browsing, time spent on social media, and time spent on email.

Overall, in our cleaned sample of 556, 49.5 percent of respondents were female and 50.5 percent were male; 94.1 percent indicated having contributed to a campaign in the past year, while 5.9 percent did not make such contributions; and 24.8 percent reported contributing 0–30 euros, 27 percent reported contributing 31–60 euros, 25 percent reported contributing 61–150 euros, and 23 percent reported contributing 151 euros or more.

### **3.2. *Measurement Model***

The SEM-lavaan package in R-programming for structural equation modelling was used for our model’s estimations and analysis. SEM is the most suitable method, as suggested by (Rosseel, 2012, Henseler et al., 2015) for estimating and analyzing complex structural models that include many constructs, indicators, and model relationships. Because of the complexity of our research model in terms of its items, constructs, and relationships among them, the choice of SEM-lavaan for our hypothesis testing was appropriate.

Latent constructs	Measurement items	Factor loadings	Source	
FCI (financial contribution intention)	FCI1	Given the chance, I intend to financially contribute to crowdfunding campaigns.	0.857***	FCI1-3 adapted from "intention to transact" in Pavlou (2003) FCI4-FCI5 adapted from "intention to participate" in Algesheimer et al. (2005)
	FCI2	Given the chance, I predict that I would financially contribute to crowdfunding campaigns in the future.	0.873***	
	FCI3	It is likely that I will financially contribute to crowdfunding campaigns in the near future.	0.844***	
	FCI4	I have the intention to financially contribute to crowdfunding campaigns.	0.902***	
	FCI5	I intend to actively contribute to crowdfunding campaigns financially.	Removed	
PU (perceived usefulness)	PU1	Overall, I find the crowdfunding website (I usually visit) useful.	Removed	PU1-4 adapted from "perceived usefulness" (related to web retailer websites) in Pavlou (2003)  PU5-7 adapted from "perceived usefulness" (related to online travel communities) in Casalo et al. (2010)
	PU2	I think the crowdfunding website I usually visit to be valuable to me.	0.799***	
	PU3	The content on the crowdfunding website I usually visit is useful to me.	0.909***	
	PU4	The crowdfunding website I usually visit is functional.	Removed	
	PU5	Using the crowdfunding website (I usually visit) helps me to identify interesting projects I can support.	Removed	
	PU6	Using the crowdfunding website (I usually visit) helps me to support projects and causes more efficiently.	Removed	
	PU7	In general, the crowdfunding website (I usually visit) is useful for finding interesting projects that need support.	Removed	
PEU (perceived ease of use)	PEU1	The crowdfunding website (I usually visit) is simple to use, even when using it for the first time.	0.875***	PEU1-4 adapted from "perceived ease of use" (related to online travel communities) in Casalo et al. (2010) PEU5 adapted from "perceived ease of use" (related to blogging tools) in Hsu & Lin (2008)
	PEU2	In the crowdfunding website I usually visit everything is easy to find.	0.917***	
	PEU3	The structure and contents of the crowdfunding websites I usually visit are easy to understand.	Removed	
	PEU4	It is easy to navigate and move within the crowdfunding website I usually visit.	0.910***	
	PEU5	Learning to use the crowdfunding website (I usually visit) is easy.	Removed	
SUBN (subjective norm)	SUBN1	People who are important to me think that I should contribute to crowdfunding campaigns.	0.845***	SUBN1-2 adapted from "social norms" (towards blog usage) in Hsu & Lin (2008)  SUB2-4 adapted from "interpersonal influence" (towards online shopping) in Hsu et al. (2006)
	SUBN2	People who influence my behavior encourage me to contribute to crowdfunding campaigns.	0.787***	
	SUBN3	My colleagues think that I should contribute to crowdfunding campaigns.	0.786***	

	SUBN4	My friends think that I should contribute to crowdfunding campaigns.	0.886***	
IM (image)	IM1	People in my social/work environment who use crowdfunding websites have more prestige than those who do not.	0.919***	UR1-3 adapted from "image" (related to IT system use) in Venkatesh & Bala (2008)
	IM2	People in my social/work environment who use crowdfunding websites have a high profile.	0.716***	
	IM3	Using crowdfunding websites is a status symbol in my social/work environment.	Removed	
TR (task relevance)	TR1	Using crowdfunding websites is compatible with the way I like to support projects and causes.	0.874***	TR1-3 adapted from "compatibility" (related to mobile commerce) in Wu & Wang (2005)
	TR2	Using crowdfunding websites fits with my lifestyle.	0.808***	
	TR3	Using crowdfunding websites fits well with the way I like to contribute to projects and causes.	0.866***	
OQ (output quality)	OQ1	The crowdfunding website I usually visit is known to be dependable.	0.854***	OQ1-3 adapted from "web-retailer reputation" (related to web retailers) in Pavlou (2003)
	OQ2	The crowdfunding website I usually visit has a poor reputation.	Removed	
	OQ3	The crowdfunding website I usually visit enjoys a positive and good profile.	0.895***	
DMS (demonstrability)	DMS1	I have no difficulty telling others about the results of using crowdfunding websites.	0.785***	DMS1-4 adapted from "result demonstrability" (related to IT system use) in Venkatesh & Bala (2008)
	DMS2	I believe I can communicate to others the consequences of using crowdfunding websites.	0.804***	
	DMS3	The results of using crowdfunding websites are apparent to me.	Removed	
	DMS4	I may have difficulty explaining why using crowdfunding websites may or may not be beneficial.	Removed	
EXP (experience)	EXP1	I frequently contribute financially to crowdfunding campaigns.	0.810***	EXP1-2 adapter from "eWoM Participation" in Yoo et al. (2013)
	EXP2	I spend much effort in financially contributing to crowdfunding campaigns.	0.613***	
VOLT (voluntariness)	VOLT1	My use of crowdfunding websites is voluntary.	0.871***	VOLT1-3 adapted from "voluntariness" (related to IT system use) in Venkatesh & Bala (2008)
	VOLT2	Although it might be helpful, using crowdfunding websites is not compulsory in my work/study environments.	Removed	
	VOLT3	No one requires me to use crowdfunding websites.	0.771***	
FCB (financial contribution behavior)	FCB	Roughly estimating please indicate how much money IN TOTAL have you contributed to reward-based crowdfunding campaigns in the past year? (please indicate currency and sum).	N/A	Adapted 'from financial contribution behavior' Shneor & Munim (2019)

**Table I: Survey items, measurement properties and sources.**

*Number of observations is 556 for all measurement items. Model fit: RNI = 0.973 > 0.95, CFI = 0.976 > 0.90 TLI = 0.969 > 0.90, RMSEA = 0.038 < 0.08, SRMR = 0.038 < 0.08,  $\chi^2$  (t-statistic/degree of freedom i.e., 455.655/254) = 1.79 < 3. † $p < 0.10$ , \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .*

First, we conducted an exploratory factor analysis, which resulted in the removal of some items that either exhibited cross-loadings or loading levels below 0.40 (Hair et al., 2010) (Table I).

Second, we performed a confirmatory factor analysis with all items that were deemed valid. Examination of the fit indices reveals that the ratio of the chi-square and degrees of freedom ( $455.655/254$ ) = 1.79 and below the upper threshold of 3. The comparative fit index (CFI) of 0.976 and the Tucker-Lewis index (TLI) of 0.969 all exceed the minimum threshold of 0.90. Root mean square error of approximation (RMSEA) value of 0.038, and standardized mean square route (SRMR) value of 0.038, are all below the 0.08 maximum threshold. Hence, all indicators meet the threshold requirements recommended by best practice (Hair et al., 2010) and suggest good fit for our model.

Furthermore, we conducted a series of quality and rigorous tests to alleviate concerns with various biases. First, we tested for non-response bias comparing the means of two sub-samples of the first and last 278 respondents, where the p-values of; age, sex, time (number of hours) for online browsing, e-commerce, email, and social and professional networking sites were all greater than 0.05, confirming that our data do not suffer from non-response bias. Second, we performed all tests for common method bias (Harman's single factor, common latent factor, and marker variable) where our results indicated explanatory powers well below the maximum threshold of 50 percent. We also tested for reliability (Cronbach, 1951) and validity of our measures (Table II). None of the variables were normally distributed, so the robust maximum likelihood method was employed for SEM estimation (Rosseel, 2012).

#### **4. Results**

We estimated three different SEM models. Model (a) tested TAM1 (Davis et al., 1989) with control variables; namely, Hypotheses 1–3. Model (b) tested the theoretical extension of TAM2 (Venkatesh and Davis, 2000) with control variables but without moderating variables; that is, Hypotheses 1–10. Model (c) tested the TAM 2 (Venkatesh and Davis, 2000) with both control and moderating variables; that is, Hypotheses 1–12.



Regarding the models' goodness-of-fit indices and comprehensiveness, Model (c) (with CFI: 0.965, TLI: 0.957, RMSEA: 0.043, SRMR 0.040, and  $\chi^2$ : 2.04) had the best fit, while Model (b) had CFI: 0.962, TLI: 0.955, RMSEA: 0.046, SRMR: 0.059, and  $\chi^2$ : 2.17 and Model (a) had CFI: 0.964, TLI: 0.954, RMSEA: 0.069, SRMR 0.062, and  $\chi^2$ : 3.62. Accordingly, we focused on module (c) and present the results in Table III.

	FCI	PEU	PU	SUB	IM	TR	OQ	DMS	EXP	VOLT	Reliability
FCI	1	(0.126)	(0.213)	(0.130)	(0.021)	(0.282)	(0.164)	(0.159)	(0.377)	(0.027)	<b>0.92</b>
PEU	0.356	1	(0.460)	(0.012)	(0.002)	(0.342)	(0.513)	(0.245)	(0.031)	(0.169)	<b>0.93</b>
PU	0.462	0.678	1	(0.122)	(0.063)	(0.403)	(0.383)	(0.232)	(0.160)	(0.092)	<b>0.84</b>
SUBN	0.361	0.110	0.350	1	(0.246)	(0.084)	(0.022)	(0.012)	(0.154)	(0.001)	<b>0.89</b>
IM	0.145	0.040	0.251	0.496	1	(0.065)	(0.000)	(0.002)	(0.063)	(0.013)	<b>0.79</b>
TR	0.531	0.585	0.635	0.290	0.255	1	(0.473)	(0.271)	(0.131)	(0.204)	<b>0.88</b>
OQ	0.405	0.716	0.619	0.147	0.019	0.688	1	(0.342)	(0.063)	(0.299)	<b>0.86</b>
DMS	0.398	0.504	0.482	0.110	0.040	0.520	0.585	1	(0.073)	(0.328)	<b>0.77</b>
EXP	0.614	0.176	0.400	0.392	0.251	0.362	0.250	0.270	1	(0.000)	<b>0.66</b>
VOLT	0.165	0.411	0.304	-0.031	-0.113	0.451	0.547	0.573	0.019	1	<b>0.80</b>
<b>AVE</b>	<b>0.755</b>	<b>0.811</b>	<b>0.732</b>	<b>0.684</b>	<b>0.679</b>	<b>0.722</b>	<b>0.765</b>	<b>0.631</b>	<b>0.515</b>	<b>0.678</b>	

**Table II. Latent construct correlations, and reliability (Cronbach's alpha) and divergent validity**

**Notes:** The figures below and above the diagonal (in parentheses) are the correlations of the constructs and squared of correlations of the constructs respectively. AVE is the average Variance Extracted.

Regarding the explanatory power of the models ( $R^2$ ), Model (a) explained; 44.5 percent of backer's perceived usefulness of crowdfunding platform, 20.6 percent of backer's financial contribution intentions and 12.7 percent of backer's financial behavior. Model (b) explained 26.5 percent of backer's image, 61.2 percent of backer's perceived usefulness of crowdfunding platform, 28.4 percent of backer's financial contribution intentions, and 12.8 percent of backer's financial contribution behavior. Model (c) explained 33.8 percent of backer's image, 68.7 percent of backer's perceived usefulness of crowdfunding platform, 31.9 percent of backer's financial contribution intentions, and 13.10 percent of backer's financial contribution behavior.

Table III presents the results of the SEM analyses. Our results are consistent with both TAM models, except for the influence of voluntariness. We found perceived usefulness to a strong determinant of intention (supporting H2a). Also, the effect of percei-

<b>Hypothesis:</b>	<b>Std. estimate Model (a)</b>	<b>Std. estimate Model (b)</b>	<b>Std. estimate Model (c)</b>	<b>Result</b>
H1a: PEU→PU	0.667 (0.050)***	0.410 (0.060)***	0.467 (0.040)***	Accepted
H1b: PEU→FCI	0.101 (0.085)	0.123 (0.093)	0.103 (0.069)†	Accepted at 10%
H2a: PU→FCI	0.380 (0.090)***	0.317 (0.107)***	0.322 (0.077)***	Accepted
H2b: PEU→PU→FCI	0.253 (0.066)***	0.130 (0.047)***	0.150 (0.037)***	Accepted
H3: FCI→FCB	0.255 (0.047)***	0.257 (0.047)***	0.282 (0.044)***	Accepted
H4: DMS→PU		0.094 (0.055)	0.077 (0.032)*	Accepted
H5: TR→PU		0.216 (0.063)*	0.208 (0.041)***	Accepted
H6: OQ→PU		0.102 (0.073)	0.079 (0.047) †	Accepted at 10%
H7a: SUBN→FCI		0.236 (0.053)***	0.257 (0.043)***	Accepted
H7b: SUBN→PU		0.172 (0.043)***	0.185 (0.030)***	Accepted
H8: SUBN→PU→FCI		0.055 (0.022)**	0.059 (0.016)***	Accepted
H9: SUBN→IM		0.514 (0.045)***	0.582 (0.032)***	Accepted
H10a: IM→PU		0.089 (0.040)*	0.095 (0.027)**	Accepted
H10b: SUBN→IM→PU		0.046 (0.020)*	0.055 (0.015)***	Accepted
H11a: SUBN→FCI (EXP)			-0.085(0.052)†	Accepted at 10%.
H11b: SUBN→PU (EXP)			-0.026 (0.031)	Rejected
H12: SUBN→FCI (VOLT)			-0.043 (0.038)	Rejected
<i>Controls: Age→FCB</i>	0.183 (0.005)***	0.184 (0.022)***	0.190 (0.052)***	Age affects behavior
<i>Gender→FCB</i>	0.180 (0.119)***	0.180 (0.119)***	0.118 (0.176)***	Gender affects behavior

**Table III: Summary of Hypothesis Testing and Estimation Results.**  
*(Standard error in parenthesis. \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$ , † $p < 0.10$ )*

ved ease-of-use on intention was found to be positive, but not as strong as perceived usefulness (weakly supporting H1b). The effect of perceived ease-of-use on perceived usefulness was highly significant and positive (supporting H1a). Also, the mediation effect of perceived usefulness was confirmed to be partial and highly significant (supporting H2b). Similarly, the relationship between usage intention and behavior was confirmed to be positive and highly significant (supporting H3).

Concerning cognitive instrumental processes, demonstrability was found to positively influence perceived usefulness (supporting H4). The influence of task relevance on perceived usefulness was highly significant and positive (supporting H5, both before and after introducing moderators). Similarly, output quality was found to have a positive effect on perceived usefulness (supporting H6). Concerning social influence processes, subjective norms were found to have a highly significant positive influence on perceived usefulness, financial contribution intentions, and backer's image (supporting H7a, H7b and H9). Also, the mediation effect of perceived usefulness between subjective norms and financial contribution intention was confirmed (supporting H8). Backer's image was found to positively influence perceived usefulness (supporting H10a). The mediation effect of backer's image between subjective norm and perceived usefulness relationship was confirmed (supporting H10b).

Regarding the roles of moderators, crowdfunding experience was found to negatively moderate the relationship between subjective norms and financial contribution intention (weakly supporting H11a). Also, experience negatively moderates the relationship between subject norms and perceived usefulness, despite its insignificant influence (rejecting H11b). However, voluntariness was not found to moderate the relationship between subjective norms and contribution intention (rejecting H12).

Finally, we found that age and sex both significantly influence financial contribution behavior, where female and older backers exhibited higher contribution behavior.

## **5. Discussion**

Overall, our findings suggest that the TAM model properly captures the antecedents of backers' financial contribution intention and behavior in the context of reward

crowdfunding, supporting both TAM 1 (Davis et al., 1989) and TAM 2 (Venkatesh and Davis, 2000). Accordingly, the current study is one of the first to examine the applicability of the full TAM model in the reward crowdfunding contexts. Therefore, our study further complements the theoretical arsenal used for explaining contribution intentions and behavior and the specificities in terms of crowdfunding.

Specifically, we show that while both perceived usefulness and ease-of-use are positively associated with intention, the former exerts greater influence in reward crowdfunding. This is consistent with the results of a meta analyses using several hundreds of studies in other contexts, which found, overall, that the effect of perceive ease-of-use had a less important effect than perceived usefulness on user intentions (Yousafzai et al., 2007b). Nevertheless, when attempting to explain this result in our specific context, there may be relatively little variance in perceived ease-of-use, resulting from crowdfunding combining two systems users that may already be well familiar with: social media and e-commerce. In this respect, crowdfunding platforms do not represent usage difficulties beyond those that are already presented in existing popular websites. At the same time, views may differ to a greater extent with respect to perceived usefulness, or the extent to which crowdfunding platforms cater well to the needs of would-be backers. An alternative explanation may be that crowdfunding may include more than just one task, with some being easier than others, rendering an overall evaluation difficult and resulting in weaker effects, as suggested by Gefen and Straub (2000) and Keil et al. (1995).

Perceived usefulness was found to be positively and significantly associated with subjective norms, image, demonstrability, and task relevance to a strong degree, and to a lesser degree with output quality. The weaker association may be related to little variance in output quality of campaigns in the short term, which can be understood simply as whether a campaign was successful or not.

In addition to all direct effects, we also found evidence of indirect effects. These include perceived usefulness mediating the effects of perceived ease-of-use on contribution intention and subjective norms on intention, as well as image mediating the effect of social norms on perceived usefulness.

While the above findings generally support TAM's suggested relationships, our findings do not support its predictions of moderator effects for voluntariness and experience. First, finding no moderation effect of voluntariness may be crowdfunding-specific, as – by definition – users engage in crowdfunding contributions on a voluntary basis. Unlike software imposed on workers by companies they work for, the use of crowdfunding technologies depends on voluntary engagement. Furthermore, while reciprocity expectations may be evident in backing dynamics (Zheng et al., 2014; André et al., 2017), these may not represent the majority of backers, which may not run campaigns themselves. Second, the no-moderation effect of experience may again result from relatively short experience of most crowdfunding platform users, suggesting little variance in common low levels of related experience across most backers.

Furthermore, when we compare our study to earlier studies using various versions of TAM, we are able to highlight several new insights and contributions. This discussion refers to Djimesah et al. (2022), which used TAM1 only based on data from Ghana; Bakari et al. (2021), which used the UTAUT model based on Malaysian entrepreneurs seeking equity crowdfunding and Jaziri; and Miralam (2019) and Desmet (2017), which integrated other risk constructs with TAM1 based on Tunisian entrepreneurs and French Internet users, respectively.

First, while our study presents empirical evidence from actual platform users in a developed market context, earlier studies were conducted in developing market environments, where crowdfunding markets are at their infancy stage (Ziegler et al., 2020) or not yet fully available (e.g., Djimesah et al., 2022).

Second, our findings show that adding the additional variables of the extended TAM2 model against Djimesah et al. (2022) significantly weakens the effects of perceived ease-of-use on intentions, and its effect is primarily mediated by perceived usefulness. This is an important nuance that has been absent in earlier studies due to the use of less detailed models in those studies.

Third, we provide compelling evidence for the relevance of the more complete TAM2 model in understanding adoption of crowdfunding platforms beyond the core

insights of the more limited versions of the TAM1 used by Djimesah et al. (2022), the UTAUT model used by Bakri et al. (2021), and the TAM1 plus risk variables used by Jaziri and Miralam (2019) and Desmet (2017), all of which use a more limited set of variables than the TAM2.

Fourth, while prior studies have often analyzed crowdfunding adoption from the fundraisers' perspective – that is, the demand side – our study focuses on the supply side of crowdfunding adoption by collecting data from backers about their intentions and behaviors. Moreover, while an earlier study by Lacan and Desmet (2017) examined general Internet users' intentions to participate in crowdfunding, we examined actual crowdfunding platform users' behaviors, targeting an audience that is more familiar with crowdfunding, and can therefore better respond to questions about crowdfunding.

Furthermore, considering our study's uniqueness, we believe our findings could reach a wider audience beyond reward crowdfunding platforms. Here, we believe that our findings can be generalized across platforms offering different models of crowdfunding, such as equity and lending-based platforms. This is intuitive based on the generic nature of the core concerns of the TAM, namely with perceived ease-of-use and usefulness, which are relevant for any crowdfunding platform regardless of business model employed. This is because crowdfunding platforms often share similar interface features in terms of design, dashboard, contribution processes, visualization options, and user interactivity (Belleflamme et al., 2015) that influence backers' perceived usefulness and ease-of-use of crowdfunding platforms and backers' contribution intentions (Lacan and Desmet, 2017).

## **6. Conclusion**

Understanding the antecedents of backers' contribution behavior is important for the support of crowdfunding practice. The present study fills a gap in the study of crowdfunding behavior, from both cognitive and social influence perspectives, and is the first to empirically validate the applicability of the extended TAM 2 model in the contexts of reward crowdfunding and its use in a small-open-economy national context. While this study confirms most direct effects, the relative novelty of reward crowdfunding may explain the absence of the predicted moderation effects of experience and voluntariness.

Nevertheless, our study has certain limitations that should be acknowledged while serving as an invitation for future studies. First, the applicability of findings may be constrained to the national context in which data were collected, as well as to the specific type of crowdfunding considered (that is, reward crowdfunding). Accordingly, future studies may test the generalizability of our findings in new national contexts and different crowdfunding models. Furthermore, while we believe that our findings can be generalized across platforms offering different models of crowdfunding, such as equity and lending-based platforms, such generalization should be tested empirically in follow-up studies. Such studies can predict similar results based on the generic nature of the core concerns of the TAM, namely with perceived ease-of-use and usefulness, which are relevant for any platform regardless of business model employed.

Second, although our study aimed to deal with selection biases and rather than using data from a single campaign, we collected data from backers who may have contributed to several campaigns, as suggested by (Moleskis et al., 2019). Nevertheless, our analysis is based on a single platform. Here, as platform effects have been found in crowdfunding studies (Cumming et al., 2021), our results may be influenced by platform-related biases. Hence future research may replicate our study with samples from other platforms.

Third, by using general rather than platform-specific terminology in our measurement items, we may have underestimated relevant perceptions towards the specific context in which our study is conducted. Accordingly, future studies may capture platform-specific sentiments by using wording that specifically refers to the platform in which data is collected.

Fourth, since familiarity and experience in technology evolves over time, future studies may explore the extent to which our findings hold in a longitudinal perspective after a longer market experience with crowdfunding. Fourth, while our model represents a high degree of complexity, additional variables may still be relevant for understanding backer intentions and behavior. Accordingly, future studies may further integrate additional factors adopted from other theories that have proven relevant for understanding backers, such as facets of trust from trust theory, cognitive antecedents from social psychology theory, as well as different dimensions of well-being.

Our findings also suggest implications for practice. First, the ability to attract backers depends partly on a backer's perceived ease-of-use and perceived usefulness of a crowdfunding platform. Accordingly, to support favorable views of platform usefulness, platform operators may seek to develop features that enhance greater clarity about task relevance (for example, user cases and ready-made templates), output quality (such as more indices and facts reflecting information about campaign performance), and result demonstrability (for example, linkages and seamless transfer of relevant information across social media and communication platforms) by incorporating relevant visualizations and dashboard functionalities. In the same spirit, platform operators may seek to develop features that support greater social interaction (internal message exchanges, thematic groups, discussion rooms, etc.) and user image enhancement (such as icons, badges, awards, and recognition icons), as both have been shown to be highly relevant in shaping perceived usefulness.

Our findings also suggest that fundraisers should be concerned with their backers' perceptions of platform usefulness when evaluating different platforms and choosing one for their own fundraising campaigns. In this respect, fundraisers should assess the extent to which their platform of choice better supports result demonstrability, user interactions, and user image enhancement. Here, by opting for platforms that provide better features for these aspects of backer experience, fundraisers may avoid potential losses from use of platforms that do not enhance backers' own perceptions of usefulness, which may fail to translate into backing behavior.



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