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Business Model Development in IT Startups - The Role of Scarcity and Personalization in Generating User Feedback

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BUSINESS MODEL DEVELOPMENT IN IT STARTUPS – THE ROLE OF SCARCITY AND PERSONALIZATION IN GENERATING USER FEEDBACK

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Abstract

Despite the widely recognized importance of continuous business model development for achieving product market fit, very little remains understood about efficient methods that may support this process in the context of nascent IT ventures. Contributions for supporting value proposition development, especially in the popular field of open innovation, have largely focused on well established firms and more traditional approaches such as the lead user method. More recent findings suggest novel ways of virtual user integration, like the collection of user feedback via promotional campaigns, which is particularly prevalent among IT startups. However, these contributions have remained conspicuously theoretical. Therefore, by drawing on an experimental study in the context of the online fashion startup StyleCrowd, we investigate the role of scarcity and personalization, two classical promotional cues that have become ubiquitous on the web yet have been overlooked by research, in enhancing the virality of nascent ventures' online promotional campaigns to enhance user feedback. Our analysis reveals that while scarcity cues affect social sharing regardless of whether a campaign is personalized or not, personalization cues are particularly effective when scarcity is absent, yet are cancelled out when scarcity is prevalent. We discuss implications for research and practice.

Keywords: Business Model Development, IT Startups, Product Market Fit, Online Feedback Campaigns, Viral Marketing, Social Transmission, Scarcity, Personalization

1 Introduction

Business modelling has emerged as an important practice among large IT corporations such as Xerox (Chesbrough & Rosenbloom 2002) as well as successful IT startups like IMVU (Ries 2011) when strategically structuring and designing new approaches in the digital era (Osterwalder & Pigneur 2013). It is valuable in providing powerful ways to analyze, communicate, and manage strategic choices dynamically in today's fast paced business environment, therefore attributing an important role to the ongoing process of business model development and management (Hedman & Kalling 2003; Osterwalder & Pigneur 2010; Osterwalder et al. 2005; Pateli & Giaglis 2004). Business models are "*an abstract representation of an organization, be it conceptual, textual, and/or graphical, of all core interrelated architectural, co-operational, and financial arrangements designed and developed by an organization presently and in the future, as well all core products and/or services the organization offers, or will offer, based on these arrangements that are needed to achieve its strategic goals and objectives.*" (Al-Debei & Avison 2010, p. 372)

Especially for new IT ventures, methods such as Osterwalder & Pigneur (2010)'s Business Model Canvas offer great support in building and growing companies, because they serve as guidance when managing and developing their business (Blank 2013). According to Veit et al. (2014), it is crucial that business models describe the correct value elements of a firms offering, as well as the targeted market segments to attract and sustain users. In the context of new IT ventures, this practice is often referred to as achieving product market fit, which is critical to firm survival (Maurya 2012). The increasing attention of researchers such as Leimeister (2012) or Reichwald & Piller (2006) towards methods of open innovation, that deal with the utilization of knowledge outside the firm and the changing role of users towards becoming co-creators of companies' value propositions (Chesbrough et al. 2006), acknowledges the importance of finding efficient methods for generating user feedback to achieve product market fit. However, contributions in the context of digital business models, aside from some exceptions (e.g., Von Hippel et al. 1999), have remained largely theoretical, therefore leaving Veit et al. (2014)'s call for more empirical research using laboratory or field experiments largely unanswered.

In practice, larger firms often revert to more traditional approaches of open innovation such as the lead user method, whereas nascent IT ventures often draw on pre-launch landing pages to gather feedback on their value proposition and customer segments. It is seen as a cost effective way of co-creating the product or service with users, especially in finding the right value proposition and pricing for the business model (Ries 2011). This is frequently done by creating landing pages which convey the idea and asking users to provide feedback and framing these as promotional campaigns that offer some benefits for participants. The landing pages are spread through social networks, even prior to launching a new product or service (YAHOO! Small Business Advisor 2014). Due to its cost efficiency and broad reach, many IT startup firms try to build social buzz around these campaigns, therefore underlining the importance of a clearer understanding of how this may be accomplished. Virality, or also social buzz, describes the process of exploiting existing social networks and its participants to spread product information and therefore reach greater diffusion (Leskovec et al. 2007).

Past research on open innovation has focused more on analyzing traditional offline methods such as the lead user approach (Lüthje & Herstatt 2004; Von Hippel 1986). Furthermore, the focus has mostly been on more established firms which do not face the resource constraints nascent IT ventures are confronted with (Herstatt & Von Hippel 1992; Von Hippel et al. 1999). Although the increasing attention towards the changing role of the user towards becoming more of a co-creator has led researchers such as Füller et al. (2006) to examine how to implement these traditional approaches in the online context, only recently has there been a shift towards analyzing more novel methods for virtual user integration. Idea communities (Von Hippel 2005) and idea competitions (Piller & Walcher 2006) have become very popular methods of open innovation in the digital space, especially in the corporate world, whereas the usage of web platforms for collecting user feedback (Rohrbeck et al. 2010) is the predom-

inantly chosen method among nascent IT ventures. Unfortunately, to this point, studies of new IT ventures' viral online promotional campaigns to enhance user feedback, develop the business model and ultimately achieve product-market fit have remained conspicuously absent from information systems research.

On the other hand, social transmission theory, which seeks to explain what drives individuals to share information (Berger 2011), is very young and has focused on well established firms with brand power. Research has thereby mainly devoted attention towards content characteristics such as emotional tone or product interest (Berger & Iyengar 2012; Berger & Milkman 2012; Stephen & Berger 2009) which are far from constituting a complete picture of what factors enhance the virality of online campaigns.

Although classical promotional cues have become ubiquitous on the web and have become an integral part of online campaigns of nascent IT ventures to maximize user feedback for business model development, only little attention has been paid to study the effects of such mechanisms. While, it is clear that content characteristics and emotionality in online campaigns are positively linked to virality, less is known about how salient promotional cues such as scarcity (i.e., the deliberate shortening of product or service availability and the communication thereof) and personalization (i.e., the endowment of a promotional campaign with personal references such as greetings) enhance social sharing behavior (Berger & Milkman 2012; Chen & Berger 2013). Researchers have very well expressed that a better understanding of viral effects in online social networks may simply be obtained by examining traditional promotional tactics from the offline world (Bampo et al. 2008), yet little empirical work has answered this call. Hence, the effects of scarcity and personalization cues on sharing behavior in new ventures' online promotional campaigns have remained largely unexplored. The objective of this study is to address these gaps guided by the following research questions:

(1) *What impact do scarcity and personalization cues individually have on the social sharing of new IT ventures' promotional feedback campaigns?*

(2) *What impact do scarcity and personalization cues in combination have on the social sharing of new IT ventures' promotional feedback campaigns?*

The paper is organized as follows. In the next section, we review prior literature on social transmission as well as scarcity and personalization as classical promotional tactics. We also present the hypotheses regarding the effects of scarcity, personalization and their interaction on social transmission. The subsequent section describes the research methodology employed within our experimental study, followed by our data analysis and the results of hypothesis testing. Section 5 discusses our findings, while Section 6 highlights limitations, directions for future research and concludes our paper.

2 Theoretical Background and Hypotheses

2.1 Social Transmission Catalysts

Nascent IT ventures are constantly confronted with a lack of resources and great uncertainty regarding their product market fit (Chwolka & Raith 2012; Lumpkin & Dess 1996; Maurya 2012). Therefore, it is essential for them to interact with many future users as early as possible, so that their business model pinpoints the correct combination of value proposition and customer segments. Among new IT ventures, prelaunch online promotional campaigns are the preferred method for co-creating their product or service with their users, specifically in terms of finding the right pricing and value proposition (Blank 2013; Ries 2011). Due to its cost efficient nature and broad reach, nascent IT ventures often revert to viral marketing to spread information about their ideas and collect feedback regarding their value proposition and customer segments. Viral marketing describes the diffusion of product information by exploiting existing social networks to encourage people to share product information and recommendations with their friends (Leskovec et al. 2007). The emergence of social media has made it easier than ever to implement campaigns that can go viral, since companies like Facebook provide platforms that aim at making it as simple as possible to share information with anyone. It has also be-

come very common for nascent ventures to build minimal landing pages on the web to pitch their business idea to gather feedback and then spread links to these pages over social networks to generate buzz, often even prior to launching a product or service (Ries 2011). A great success story is the online game Minecraft, which managed to even accumulate over 3 million sold licenses and plentiful signups by promoting only a minimal version of their product (Smashmagazine 2011).

Past research on viral marketing has mostly focused on the consequences and the impact of word of mouth on sales, product adoption or also user decision-making but not so much on how word of mouth can be generated or facilitated (Benlian & Hess 2011; Benlian et al. 2015; Dewan & Ramaprasad 2012; Duan et al. 2009; Godes & Mayzlin 2009). One stream of research that addresses this gap is social network analysis, which takes a macro view on the generation of word of mouth in explaining the dynamics of how information spreads through social networks (Buttle 1998; Haywood 1989), e.g. by suggesting the identification and utilization of opinion leaders to enhance campaign virality (De Bruyn & Lilien 2008). However, only recently have researchers started to pay attention to social transmission theory, which seeks to reveal what exactly drives individual users to share information with their peers.

Berger (2013) for example, has developed a systematic overview of six factors that drive social transmission. The suggestion is that people talk about products or ideas that generate "Social currency" and are "*Triggered, Emotional, Public, Practically valuable, and wrapped into Stories*" (Berger, 2013, p. 25). His so called "STEPPS" framework captures the status quo of social transmission research and most findings directly relate to one of these factors, although the primary focus has clearly been on content characteristics. For example, Berger (2011) as well as the more comprehensive study of Berger & Milkman (2012) suggest that content which evokes high arousal, be it negative in the form of anger or positive in the form of awe drives social transmission engagement. Content that triggers deactivating emotions such as sadness is said to have inverse effects and positive content supposedly tends to be more viral than negative content. On the other hand, Berger & Schwartz (2011) showed that publicly more visible goods generate more immediate and continuous word of mouth, whereas more interesting products only generate word of mouth when they are first experienced. Finally, Chen & Berger (2013), through a combination of field data and laboratory experiments demonstrated that moderate controversy opposed to high controversy increases the likelihood of a topic being discussed as it strikes a better balance between the forces that shape discussion. The underlying rationale is that higher levels of controversy increase interest but at the same time also cause discomfort.

Despite the fact that classical promotional cues such as scarcity or personalization have become ubiquitous on the web, be it e.g. within the daily newsletters of the Wall Street Journal or purchase recommendations on Amazon.com, research has paid little attention towards their function as catalysts of social transmission in the context of promotional feedback campaigns. We therefore intend to address this research gap in the business model development context of information systems research as well as in the broader social transmission theory by examining the effect of promotional cues that expand our understanding of virality beyond extant knowledge.

2.2 Scarcity in Promotional Campaigns

Scarcity or rationing is a tactic used to stimulate purchase or other user behavior by deliberately shortening the availability of a product or service (Liu & van Ryzin 2008; Su 2007). In the context of online commerce, this is usually done by displaying texts along the lines of e.g. "only 3 left in stock" (amazon.com) or "only 4 deals left" (groupon.de). Practitioners claim that communicating scarcity helps to create "hype" and especially nascent IT ventures are increasingly turning towards scarcity when implementing their promotion campaigns. A great example is Mailbox, which managed to accumulate over one million signups for its service within only six weeks, prior to even having released its product. The company simply launched a landing page with a pre-signup option that emphasized how many other users were in line in front of the current visitor on the waiting list and therefore created a feeling of scarcity (Techcrunch 2013). Furthermore, many well established firms revert to scarcity

tactics, such as the online retailer Amazon, which only offered its new kindle tablet in a limited edition before making it available to the wider public (Forbes 2013).

Research on scarcity reaches back as far as three decades. Since the work of Cialdini (1993) who found that scarcity affects availability and that people generally value things which are less common more, there have been several empirical experiments with important contributions. Verhallen & Robben (1994) for example found a clear preference towards scarcer recipe books in their experiments as did Lynn (1991) in the context of paintings. It is believed that scarcity triggers an automated, relatively thoughtless process which limits our ability to process information and leads to perceptions of higher product value. As Cialdini (1993, pp. 266-267) puts it "*[...] scarcity hinders our ability to think...when we watch something we want become less available...a physical agitation sets in....the blood comes up, the focus narrows....the cognitive and rational side retreats....cognitive processes are suppressed....thoughtful analysis of the situation becomes less available...and brain clouding arousal [ensues]*." Subsequent research extended Cialdini's suggestions by explaining that higher levels of scarcity are associated with higher levels of perceived expensiveness (Lynn 1992; Wu et al. 2012), need for uniqueness (Amaldoss & Jain 2005; Tian et al. 2001) as well as quality (Wu et al., 2012). Research on scarcity has thereby mainly focused on user's product valuation and the consequences for purchase intentions (e.g., Suri et al. 2007). However, there is still little knowledge about how scarcity cues used within nascent ventures' promotional feedback campaigns may trigger increased sharing behavior among users.

2.3 Personalization in Promotional Campaigns

Personalization can be defined as the "ability of a company to recognize and treat its customers as individuals through personal messaging, targeted banner ads, special offers on bills, or other personal transactions" (Imhoff et al. 2001, p. 467). Online, personalization therefore describes the "company-driven individualization of customer web experience" (Allen et al. 1998, pp. 32-33).

The implementation of personalization in marketing campaigns reaches back to examples of addressing people by name in mailings or surveys (Cox III et al. 1974). The emergence of the internet has made it easier than ever to tailor communication and offerings to users and the ambit has grown from personalized greetings in communicating with users to tailored recommendations and offers in e-commerce and electronic news. For example, large online retailers such as Amazon use complex systems and algorithms to support people with their purchasing decisions by making recommendations along the lines of "Customers who bought this item also bought the following items." It has become very common, especially for nascent IT ventures, to tap into personalized communication in their online promotional campaigns. The new venture Forkly, or Dropbox in its pre-launch stage, for example built landing pages with online services that sent interested users personalized links and campaigns that can be shared with friends and followers after pre-registering for the service (Ries 2011). As soon as three of a user's friends join, the user gets early access to the service (Smashmagazine 2011). Other campaigns use personal information which users provide in subsequent interactions to make them feel more special, for example, by addressing them by name (e.g., EyeEm).

Recent research on personalization has focused on analyzing the costs and benefits associated with web personalization (Benlian 2015; Chellappa & Shivendu 2005; Sutanto et al. 2013). The suggestion is that users who are more sensitive in terms of privacy will be less likely to share information for personalization (Wattal et al. 2012). As such, there needs to be an optimal balance between the utility of personalizing and the costs associated with foregone privacy (Awad & Krishnan 2006). When this is achieved, however, personalization can improve web experience and lead to an improvement in responses desired by the provider, be it in the form of increased retention, increased purchase intention or other objectives (Ansari & Mela 2003). Numerous studies have focused on examining the trade-off between personalization and privacy (Awad & Krishnan 2006; Sutanto et al. 2013) and have studied web personalization's impact on cognitive, affective, and behavioral user reactions such as perceived usefulness and social presence (Kumar & Benbasat 2006; Wagner et al. 2014), switching costs (Kim

& Son 2009) and satisfaction (Ho et al. 2011). However, to our surprise, no attention has been devoted toward its effect on social transmission.

2.4 Hypotheses Development

As depicted in Figure 1, our research will shed light on (1) the (main and direct) effects of scarcity and personalization cues in nascent IT ventures' promotional feedback campaigns on users' actual sharing behaviors in their social networks (H1/H2) and (2) the joint effects of scarcity and personalization cues on users' sharing behavior (H3).

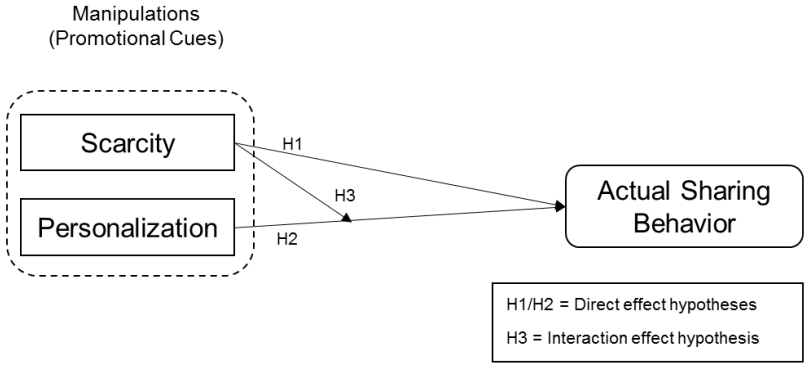

Figure 1. Research Framework

Scarcity has been found to evoke a state of physical agitation in which our sole focus becomes to fulfill the need in which we feel our freedom to be threatened (Brehm & Brehm 1981). It triggers an automated thought-process which limits our ability to think clearly and ultimately leads to higher product valuation (Cialdini 1993). The rationale is that people value things they cannot possess or which are generally harder to attain more (Lynn, 1992; Wu et al., 2012). We argue, that these insights are transferrable from the context of purchasing decisions by suggesting that under certain circumstances, social transmission is an equally legitimate reaction. Previous research has demonstrated that people (senders) share information with their peers (recipients) for self-focused reasons such as building social currency (Berger, 2011), but also due to altruistic motives (Phelps et al. 2004). Either way, we suggest that the level of fulfillment of the objective they pursue is a function of the value of the information they are sharing. We thus argue that making an offer in an online promotional campaign more scarce will evoke a thought-process which we expect to lead to higher valuation of the offer (Lynn 1991) and therefore also of the value of the information being shared. This in turn will increase the likelihood of social transmission, as freedom is threatened in the sense of foregoing the possibility of sharing valuable information and therefore reaching either altruistic or self-centered transmission-related goals, ultimately amplifying the feedback outcome. Conversely, campaigns with low scarcity will appear less valuable because senders will not feel the pain of losing opportunities to build up social currency in their network. As a result, one would expect the likelihood of sharing to be comparatively lower. In sum, we expect that senders value the information they are sharing with their peers as higher when the offer in an entrepreneurial campaign is relatively scarcer. At the same time, the very nature of the offer being so limited is likely to impose direct pressure on them to share the offer, as the information might become obsolete as time passes. Thus, we expect that

H1: Users will be more likely to share a new venture's online promotional feedback campaign with high scarcity cues compared to low scarcity cues.

Personalization on the web can improve user experience and ultimately lead to increased purchase intention or other goals desired by the provider (Ansari and Mela, 2003). A key precondition is that the user perceives foregone privacy and utility derived from personalization to be well balanced (Awad

and Krishnan, 2006). We argue that receiving personalized messages from a product or service provider on the one hand and giving up personal information on the other hand strikes such an optimal balance when users have already shown interest in and/or have pre-registered to these services. In such settings—which are prevalent in the entrepreneurial context as numerous examples of new ventures such as Forkly, Dropbox or Mailbox have demonstrated—privacy concerns take a back seat and the benefits of personalized messages come to the fore. In these contexts, personalized content makes recipients feel more important and valued (Dillman 2000). This in turn encourages socially desirable behavior in terms of users being more likely to comply with certain requests of the provider as they feel the need to contribute back and provide something in return (Cialdini 1993). Tying into the results of several prior offline studies, Joinson and Reips (2007) for example showed a significant positive effect of personalization on response rates in web based surveys.
Similarly in our context, we expect that personalized messages such as greetings within entrepreneurial campaigns will stimulate a feeling of importance and appreciation with the recipient, which in turn will lead to higher likelihood of complying with social transmission requests and ultimately amplify feedback outcome. On the contrary, we would expect comparatively lower social transmission likelihood when entrepreneurial campaigns are not personalized. Hence, we propose that online users will feel appreciated when they are addressed with personalized messages and therefore, we would expect them to be more likely to comply with the provider's request of sharing the offer with their friends. Accordingly, we expect that

H2: Users will be more likely to share a new venture's online promotional feedback campaign including personalization cues compared to those excluding personalization cues.

H1 and H2 propose that personalization and scarcity both encourage social sharing independently from one another: Scarcity by moving the gains of the individual sharing the information into the focus, namely higher potentially earned social capital in the form of trust, which is higher when an offer is generally less accessible and therefore more valuable. On the other hand, we hypothesized that personalized campaigns make individuals feel more special and therefore more likely to comply with requests to share a new venture's campaign with their friends. When the two cues are combined and employed together, however, we expect that personalization will be sidelined by scarcity and will not have a separate effect any more on users' perception of feeling important. First, scarcity of an offer makes a person feel special, too (Snyder 1992). More importantly however, as mentioned earlier, scarcity messages have been found to trigger an automated thought-process which limits our ability to think deliberately in a given decision-making task (Cialdini 1993). This limitation in users' cognitive capacity, in turn, is likely to result in the neglect or oversight of other messages competing for attention (Kahneman 1973). As such, we expect that scarcity (i.e., particularly higher levels of scarcity) will attenuate or even wipe out the effect of personalization on social sharing, leading us to the following hypothesis:

H3: Scarcity will moderate the relationship between personalization and social sharing such that scarcity will attenuate or even cancel out personalization's effect on social sharing.

3 Research Methodology

3.1 Experimental Design, Incentives and Procedures

We employed a 3 (scarcity: none vs. low vs. high) x 2 (personalization: presence vs. absence) between-subjects, full-factorial design. All treatments of scarcity were combined with personalized and non-personalized cues on the main campaign landing page, resulting in six experimental conditions (see Figure 2 and Figure 3). The campaign promoted the new venture StyleCrowd, which offers individual style recommendations and shopping at significant discounts and was in pre-launch mode at the time. The platform was in the last stages of development and the startup wanted to get user traction

and feedback before launching. The main campaign page contained textual details about the offer, a video on the business idea, a proceed button and a statement which was manipulated regarding the scarcity and personalization levels.

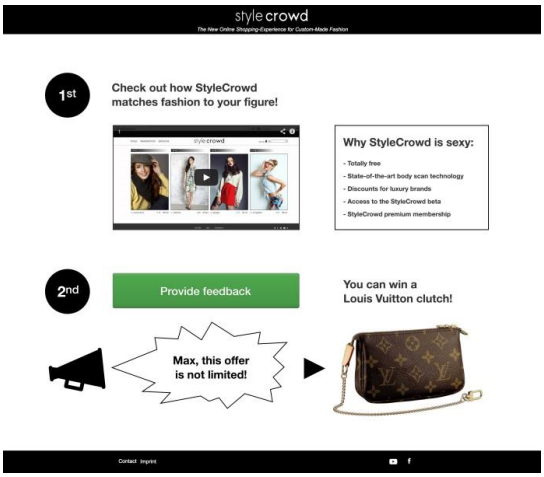

Figure 2. No Scarcity/Personalized

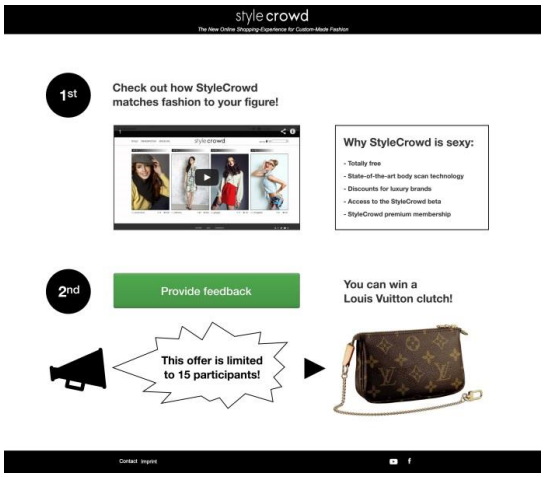

Figure 3. High Scarcity/Not Personalized

One hundred and nineteen participants recruited via e-mail from a representative online subject pool maintained by a large public university in Germany participated in an internet survey and were randomly assigned to one of the six conditions in exchange for a small participation fee. The scarcity cues referred to how many spots were remaining to partake in the offer. Since the names and e-mail addresses of the subject pool's members were accessible (i.e., they were voluntarily shared), they could be used for manipulating the personalization cues.

The experiment proceeded in three steps. First, participants received the instruction to explore the promotional campaign of StyleCrowd and to give feedback. After checking out the campaign website where they were randomly assigned to one of the six experimental conditions, all participants were asked to press a "Proceed" button (see Figure 2 and Figure 3). Second, after tapping the proceed button, they were forwarded to a webpage and prompted to share the offer with their friends, which they could do by logging into their Facebook network or entering e-mail addresses of friends. Opting into this option thus resulted in a direct distribution of StyleCrowd's promotional campaign to their peers. Participants were then routed to a web page with the post-experimental questionnaire. Participants could also opt out via a non-share button (same presentation format, thus controlling for design and saliency effects) and were then directly forwarded to the site with the post-experimental questionnaire. The questionnaire in the last step asked participants to respond to questions measuring control variables, manipulation checks, and several other variables (see Manipulations and Variables). On the last page of the survey, subjects were debriefed and thanked for participating.

3.2 Manipulations and Measured Variables

We followed Highhouse et al. (2008) and Barone & Roy (2010) to devise our manipulation of scarcity. Scarcity was thereby based on the number of participants being eligible for taking part in the lottery of the handbag on a first-come-first-serve basis, ranging from unlimited (no scarcity), 100 participants (low scarcity) to 15 participants (high scarcity). Our manipulation of personalization was based upon Porter & Whitcomb (2003)'s salutation manipulations, distinguishing between campaigns that include (exclude) participants' first name. The factors were manipulated in a speech bubble of the promotional landing page (see Figure 2) containing the lines "(<Name>,) This offer is not limited", "(<Name>,) This offer is limited to 100 participants" and "(<Name>,) This offer is limited to 15 participants".

To develop the stimuli for our studies, we conducted a pretest in which 30 participants (56% females, Mage = 24.6) ranked the scarcity and personalization levels of our treatments. The manipulation check of scarcity (no vs. low vs. high) showed that participants ranked "(<Name>,) This offer is limited to 15 participants" as significantly scarcer than "(<Name>,) This offer is limited to 100 participants" ($F(1, 29) = -7.05$, $p < .001$) as well as the control condition "(<Name>,) This offer is not limited" ($F(1, 29) = -19.80$, $p < .001$). Also, participants ranked the personalized condition compared to the control condition (non-personalized) as more personalized ($F(1, 29) = 11.62$, $p < .001$).

The dependent variable, i.e. social sharing, was measured binary (shared vs. not shared) based on actual sharing behavior during the experiment. Via clickstream data, we collected the number of clicks on the share/non-share buttons (see Figure 3) in the different experimental conditions. Several control variables (i.e., privacy concerns, product involvement, market mavenism, need for uniqueness and image-impairment concerns) that have been identified as the most salient sharing motives in extant literature were also measured. Information privacy concern with respect to sharing personal information with the campaign provider was adapted to our study context using three items ($\alpha = 0.87$, CR = 0.84, AVE = 0.79) from Malhotra et al. (2004). Product (i.e., fashion) involvement was measured by adapting one item from Zaichkowsky (1985). Market mavenism that measures the extent to which a person enjoys being a source of market-related information for others and thus shares this information with other users (Feick & Price 1987) was measured using three items ($\alpha = 0.85$, CR = 0.88, AVE = 0.78) adopted from Cheema & Kaikati (2010). Need for uniqueness (Lynn & Harris 1997; Snyder & Fromkin 1980) - a desire to perceive oneself as unique and individualized member of society - was included because of the argument that a strong attraction to products that accompany scarcity stems from a need for uniqueness. We used an abridged need for uniqueness scale based on three items ($\alpha = 0.89$, CR = 0.92, AVE = 0.81) adapted from Tian et al. (2001). We included image-impairment concerns because in social settings, people are concerned whether their actions will impair or enhance their image in the eyes of others (Leary & Kowalski 1990) and has been shown to increase social transmission of word of mouth (Zhang, 2014 #82). Three items ($\alpha = 0.81$, CR = 0.85, AVE = 0.73) from Argo et al. (2006) were adapted to measure image-impairment concerns. A 7-point Likert scale was adopted for all measures with anchors ranging from strongly disagree (1) to strongly agree (7). The full items are available on request from the authors.

Confirmatory factor analysis (CFA) results showed that all scales exhibited satisfactory levels of convergent validity. Moreover, discriminant validity requirements were met (Fornell & Larcker 1981), as each scale's average variance extracted (AVE) exceeded multiple squared correlations. Since all latent variables displayed adequate internal consistency, they were averaged to form composite scores for subsequent statistical analyses. As manipulation checks, besides rating perceived scarcity (i.e., "The number of participants eligible for partaking in the lottery of the handbag was limited") and personalization ("The promotional campaign used personalized claims") on a 7-point Likert scale, participants were asked two closed questions in the post-experimental questionnaire: (1) Have you been addressed by name on the main campaign landing page? [Yes or No], and (2) How many other participants were indicated to have the opportunity to win a Louis Vuitton handbag? [Unlimited, 100, or 15 participants].

3.3 Sample Description, Control and Manipulation Checks

One hundred and thirty one subjects from the online subject pool answered our invitation e-mail. Twelve participants were removed from the sample for the following reasons: Five subjects failed to complete the questionnaire and seven moved to quickly through the experiment as indicated by a clickstream analysis and an attention filter question. Hence, we used a sample of 119 subjects in the following analysis. Of the 119 subjects, 70 were females and 49 males. Their average age was 31.83 years, ranging from 13 to 64. On average, the subjects had been using the internet for 7.90 years, and spent 19.68 hours on the internet per week. The average reported involvement/interest in fashion was 4.53 on a seven-point Likert scale. The subjects' average monthly spend on fashion was 64.34 €.

Non-response bias was assessed by verifying that early and late respondents were not significantly different (Armstrong & Overton 1977). We compared both samples based on their socio-demographics. T-tests between the means of the early (first 50) and late (last 50) respondents showed no significant differences ($p > 0.05$) indicating that non-response bias was unlikely to have affected the results.

To confirm the random assignment of subjects to the different experimental conditions, we performed several one-way ANOVAs. These analyses could not reveal any statistically significant differences in age ($F = 0.566$, $p > 0.05$), gender ($F = 0.724$, $p > 0.05$), weekly internet time ($F = 0.713$, $p > 0.05$), privacy concerns ($F = 0.916$, $p > 0.05$), product involvement ($F = 1.193$, $p > 0.05$), market mavenism ($F = 0.835$, $p > 0.05$), need for uniqueness ($F = 1.175$, $p > 0.05$), or image-impairment concerns ($F = 1.182$, $p > 0.05$) between all 6 experimental groups, therefore confirming that the random assignment of subjects to the conditions was successful. We additionally controlled whether participants who triggered the share button also actually shared the campaigns among their friends. Our clickstream analysis revealed that all participants that pressed the sharing button also either logged into their Facebook network (89.47%) or entered e-mail addresses of friends (10.53%). Given that we addressed participants with their first names in the personalization conditions, we also checked whether participants' privacy concerns were low and whether these potential concerns affected their sharing behavior. Participant's privacy concerns were quite low across all conditions ($M = 2.34$ on a 7-point Likert scale) and were not significantly associated with their sharing behavior ($r = -0.07$, $p > 0.05$), confirming that privacy concerns had no negative impact on social sharing in our promotional context. Finally, given that a handbag appears to appeal systematically more to females than to males as incentive, we analyzed whether males and females significantly differed in their sharing behavior, but did not find a significant difference ($p > 0.05$).

The manipulation checks confirmed that participants in the high scarcity conditions ($M = 4.56$; $SD = 1.01$) recalled the number of participants eligible for the lottery as being more limited than in the low ($M = 3.13$; $SD = 0.96$) and no scarcity ($M = 2.06$; $SD = 0.78$) conditions ($F = 53.07$, $p < 0.001$). The low scarcity condition was also experienced as being more limited than the no scarcity condition (all planned contrasts between high, low and no scarcity conditions: $t < 1$). Likewise, participants in the personalization conditions ($M = 5.64$; $SD = 0.99$) indicated to a higher degree that promotional claims were used on the main landing page than those in the no-personalization conditions ($M = 2.25$; $SD = 0.83$). Finally, we found that all subjects exactly matched our treatments regarding the two closed manipulation check questions for the six conditions, implying that the manipulations were successful.

4 Results

4.1 Main Effect Analysis for Scarcity and Personalization

To test H1 and H2, we entered scarcity, personalization, and their interaction term into a logistic regression to predict actual sharing behaviour. The results revealed a significant main effect of scarcity ($b = 1.57$, Wald statistic (1) = 6.88, $p < 0.01$) and a marginal main effect of personalization ($b = 1.91$, Wald statistic (1) = 2.52, $p = 0.056$). The two-way interaction was also significant ($b = -1.24$, Wald statistic (1) = 2.73, $p < 0.05$)[1]. Overall, consistent with H1, participants primed with scarcity were more likely to share the campaign than those in the no scarcity condition. Likewise, participants in the personalized condition were (marginally) more likely to share the promotional campaign than those in the control group, in support of H2. Taken together, these results show that priming recipients in a

[1] We interpret the significant two-way interaction in 4.2 when analysing the interaction effect between scarcity and personalization.

campaign with scarcity significantly increases the probability of them sharing the offer. Similarly, addressing participants by name increased the likelihood of users sharing the campaign with friends.

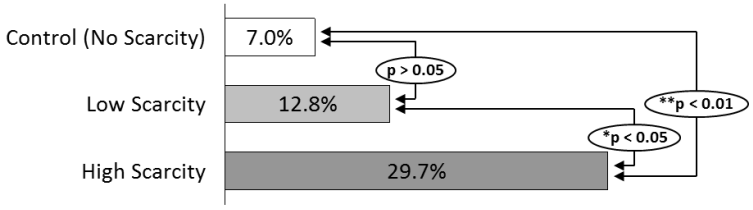

Figure 4. Actual Sharing (%) Across Scarcity Levels

We conducted post-hoc tests to shed further light into the differences among high, low and no scarcity conditions. Overall, as depicted in Figure 4, our findings show that participants primed with high scarcity are significantly more likely to share the promotional offer than those in the low scarcity (29.70% vs. 12.80%, t = 4.11, p < 0.05) or the no scarcity condition (29.70% vs. 7.00%, t = 5.67, p < 0.01). However, we found no evidence that participants in the low scarcity condition were significantly more likely to share the promotional offer than those in the no scarcity condition (t = 1.48, p > 0.05). These results show that scarcity makes a difference in promoting social sharing only when it is high but not when it is low, revealing a boundary condition to the cue's effect.

4.2 Interaction Effect Analysis for Scarcity and Personalization

As indicated in the logistic regression results in 4.1, the main effects of scarcity and personalization on social sharing were qualified by a significant two-way interaction (b = -1.24, Wald statistic (1) = 2.73, $p < 0.05$), suggesting that the effects of the promotional cues on social sharing are contingent on the presence of each other. To test H3, we conducted planned contrast tests to examine the conditional effects of personalization at different levels of scarcity (none, low, high). The results in the cross-over-pattern shown in Figure 5 highlight that participants primed with personalization are significantly more likely to share the promotional offer than those in the non-personalized condition when scarcity is absent (18.75% vs. 0.00%, F = 11.882, $p < 0.01$). However, a significant difference in social sharing between personalized and non-personalized campaigns did not emerge at low (22.07% vs. 16.67%, F = 0.85, $p > 0.25$) and, in particular, high (27.78% vs. 31.58%, F = 0.122, $p > 0.40$) levels of scarcity. These results support H3 by showing that priming recipients in an online feedback campaign with personalization does not significantly increase the probability of them sharing the offer with their friends when scarcity is present; it does however when it is absent. In other words, high scarcity resulted in a similar likelihood of sharing no matter whether the online campaign was personalized or not, whereas no scarcity led to greater sharing of personalized campaigns compared to non-personalized ones.

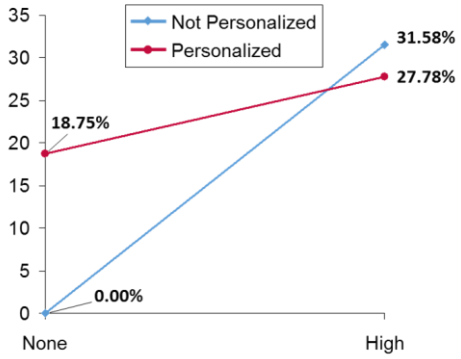

Figure 5. Interaction Effect of Scarcity and Personalization. (low scarcity left out for clarity)

5 Discussion

Open innovation has become common practice in business model development among more established firms. However, the prevalent method of collecting information from users via online campaign landing pages also allows IT startups to gather critical insights regarding their offering and targeted customer segments, which is a necessity for reaching product market fit. In doing so, viral marketing is a key strategy for amplifying feedback outcomes in terms of higher recipient volume and variety. However, to date only little is understood about what drives sharing in the context of IT ventures' promotional feedback campaigns as well as what generally drives sharing, aside from network structure, content characteristics or emotionality, which have been in the spotlight of previous research (Bampo et al. 2008; Berger 2013).

This study examined the role of scarcity and personalization in enhancing the social transmission of nascent IT ventures' promotional feedback campaigns. The data from our online experiment supported the premise that scarcity has a positive causal effect on social transmission engagement. The argument is that senders value the information they are sharing with their peers as higher when the offer in an entrepreneurial promotional campaign is scarcer and that they expect to build more social currency in return. At the same time, the very nature of the offer being so limited imposes direct pressure on them to share the offer as fast as possible, as the information might become obsolete as time passes. Furthermore, we found that scarcity has to exceed an upper threshold to be effective. Whereas campaigns inducing low scarcity did not significantly differ in social transmission compared to those with no scarcity at all, campaigns with high scarcity had strong effects indicating that producing high scarcity settings is a viable promotional tactic to increase virality. We also found a positive and marginally significant effect of personalization on sharing behavior, which supported our premise that personalization can increase virality, especially when users can expect to be exposed to personalized promotions. Moreover, we found that when combining the two tactics, personalization cues are particularly effective for increasing social sharing in the absence of scarcity due to it being overridden in its presence. A plausible explanation for this crowding-out effect is that scarcity messages trigger an automated thought-process that limits our ability to think deliberately in a given decision-making task (Cialdini 1993). This limitation affects our cognitive capacity, and in turn result in the neglect or oversight of other messages competing for attention (Kahneman 1973), in our case personalization.

Our study contributes to information systems research by providing insights into contextual cues, namely scarcity and personalization, which may be leveraged to trigger a viral loop around promotional feedback campaigns of nascent IT ventures online, when collecting user feedback on pricing, the value proposition and product market fit. Aside from cost efficiency reasons, these results help nascent IT ventures to advance their business model as it allows them to tap into a wide and broad audience, therefore not only generating larger quantities, but also greater variety in the feedback of their offering and targeted customer segments, which in turn might open entirely new opportunities which had previously been unexplored. Similarly, we believe our findings also present an opportunity for more established firms during their product development process. Hitherto, only few established companies have tapped into viral marketing for collecting ideas or feedback on new products, like for example McDonalds with its successful "Mein Burger" campaign in Germany in 2012 (Zdnet 2012). A possible explanation for this hesitation may be company internal barriers as well as the fear of losing "control" of user discussions, leading to negative image effects that may dilute brand equity (Rohrbeck et al. 2010). In sum, our findings complement studies that emphasize the importance of finding the right match between value proposition and customer segments (Veit et al. 2014) and those that analyze novel methods to collect user feedback for the development of digital business models (Leimeister 2012; Reichwald & Piller 2006). By drawing on an experimental field study, we also answer Veit et al. (2014)'s call for more empirical research on digital business models. We also contribute towards social transmission theory by introducing previously underexplored catalysts of social sharing and providing a validated model for their interactions. In addition, we respond to Jeong & Kwon (2012)'s call for research on the effects of scarcity in the online context. Lastly, we bring more

clarity to research on personalization through greetings. While previous research examined settings in which users were sent e-mail advertisements with unsolicited personalized greetings and found negative user responses (e.g., Wattal et al. 2012), our results, similar to other studies (Dörr et al. 2013; Heerwegh 2005; Joinson & Reips 2007; Wagner et al. 2013), indicate that personalized messages can have a positive impact on the provider's desired actions, specifically social sharing. We attribute these positive effects to contexts where users can expect to be addressed by name and therefore privacy concerns are less prevalent. However, our findings also reveal a novel boundary condition such that personalization cues are particularly effective when they operate independently from scarcity cues.

Our results have several implications for practice. For nascent IT ventures that seek to optimize social transmission of their online feedback campaigns, we suggest to employ high scarcity and neglect personalization as long as high scarcity is a feasible option for implementation. When high scarcity is not a viable option and potential privacy concerns are less prevalent, personalization should instead be incorporated as facilitator of social transmission to increase campaign feedback.

6 Limitations, Future Research and Conclusion

Three limitations of this study need to be noted. First, the nature of the venture underlying the experiment naturally appealed more to females. As research on scarcity and personalization does not suggest the effectuated higher product valuations as well as the feelings of being valued, which constitute the core of our argument, to be a gender specific phenomenon, we would expect similar effects in a context more pertinent to males. However, there have been findings which indicate that females are generally more likely to disclose information than males (Dindia & Allen 1992). Hence, it is essential to test the validity of our results in the context of more gender-neutral settings. Second, our study analyzed how scarcity and personalization triggered social sharing in the context of e-commerce with a special focus on fashion—a conspicuous and experience good. Future research should examine how these cues work in other business model contexts (e.g., freemium) and for different kinds of products (e.g., inconspicuous and search products). Third, our study focused on personalization settings in which users are prepared and can expect to be addressed by name, which is the case in many prelaunch settings of new IT ventures. Future studies should investigate whether users are willing to share personalized campaigns to a similar extent when they don't know how the campaign provider collected personal information, as users' privacy concerns might undermine the effects of personalization (Awad & Krishnan 2006; Wattal et al. 2012).

Future research should test other forms of user, product or context based personalization to analyze whether these lead to similar results as personal greetings. Furthermore, there have been numerous studies which have brought the important role of opinion leaders in product adoption to attention (Iyengar et al. 2011). The notion that users have different types of networks in terms of density and reach leads us to expect such effects to moderate the effects of the examined cues on social sharing (Godes & Mayzlin 2009). Therefore, future studies should aim at examining promotional cues' impact on social sharing controlling for factors such as sharers' network density or position.

To conclude, we believe that examining feedback generation mechanisms for business model development is an important avenue especially for future empirical research, given that previous contributions in the context of digital business models have remained mostly theoretical. Business model development is critical to firm survival, and collecting feedback on critical components of the business model, such as pricing or the value proposition will increase firm success in the market. We hope this study provides fresh impetus to researchers to expand our understanding on the design of online promotional feedback campaigns that support future business model development.

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