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How VR can Boost Inspiration and Increase Donations

Abstract

One of the major challenges that non-profit organizations face is inspiring people to be concerned about issues seem geographically and emotionally distant. The aim of this study is to explore how Virtual Reality (VR) can boost inspiration and encourage potential donors to contribute to nonprofit fundraisings. To achieve this aim, a three group between-subjects experiment was conducted to examine how varying the degree of immersiveness of a short documentary about a remote health issue influences user reported social and spatial presence, inspiration, and donation intention. Findings reveal that perceived media richness gradually increases the user's spatial presence. Then, the positive effect of social and spatial presence on customer inspiration was tested and successfully verified. Finally, customer inspiration increases donation intention.

Keywords: virtual reality, customer inspiration, non-profit organizations.

Track: 40 – Public and Nonprofit Organizations and Management

Introduction

One of the biggest challenges non-profit organizations face is inspiring people to be concerned about situations that seem geographically and emotionally distant. Hence, a few non-profit organizations have started using virtual reality (VR) technology for fundraising (Yoo & Drumwright, 2018). VR is a technological medium that allows consumers to have immersive forms of reality. VR abstracts the users from their surrounding environment, by presenting them with both visual and audio stimuli and using stereoscopic head-mounted displays (HMD) to make them feel in a completely different setting (Hyun & O'Keefe, 2012).

Non-profit marketers can use VR devices to provide realistic, vivid, and interactive content that creates social presence for potential donors (Yoo & Drumwright, 2018). Likewise, Hung and Wyer Jr. (2009) suggest that a rich media channel, such as VR, has a positive effect on intentions to donate. Ma (2019) argues that stories presented in immersive virtual (vs. traditional mediated) environments lead to a higher level of spatial and social presence. Hence, there is an enormous potential in online fundraising approaches and particularly in the use of VR (Yoo & Drumwright, 2018). However, to our knowledge, there is still little empirical research on how VR can boost inspiration and subsequently encourage potential donors to contribute to non-profit fundraisings.

Customer inspiration is a motivational state that "facilitates the transition from the reception of a marketing-induced idea to the intrinsic pursuit of aconsumption-related goal" (Böttger et al., 2017, p.118). Inspiration can, therefore, redirect attention toward exposing prospective donors to new ideas and serve as means for increasing charitable giving (Lemon & Verhoef, 2016). Within this context, the current study intends to better understand the influence of immersive technologies, namely VR, and inspiration on donation intentions. Here an emphasis will be placed in exploring the concepts of media richness, social presence, spatial presence, sensation-seeking tendency, customer inspiration, and the subsequent donation intention.

Hypotheses development

The Media Richness Theory (MRT; Daft & Lengel, 1986) assigns a certain level of richness to various media (i.e., classifies them into "rich media" and "lean media" categories, depending on their ability to convey meaning when executing communication tasks). Much like face-to-face communication, VR can provide a realistic and satisfying experience with practically immediate feedback in response to users' actions in an immersive and interactive environment.
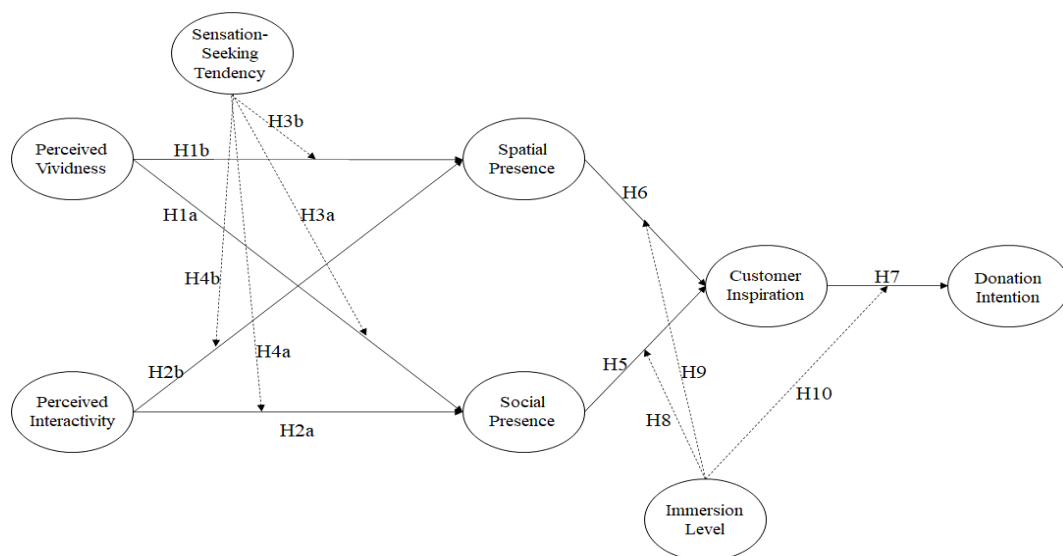
Figure 1. *Conceptual Model*

Vividness and interactivity are important factors that lead to individuals' positive emotional responses through media richness (Jiang & Benbasat, 2007). Vividness means the media device's technical ability to create a rich environment (Jiang & Benbasat, 2007), while interactivity is defined as "the degree to which a user can transform the form and content of the mediated environment in real-time" (Fortin & Dholakia, 2005, p. 86).

Previous studies demonstrate that presence can be generated by media richness (Steuer, 1992; Kandaurova & Lee, 2019). Presence refers to the natural perception of an environment, and telepresence is the mediated perception of an environment (Steuer, 1992). Therefore, this sense of "being there", can be induced by VR (Biocca, 1997). Two types of presence constitute the core psychological mechanisms that mediate the effects of immersive virtual environments on persuasive outcomes, namely, spatial presence and social presence (Ma, 2020). Social presence is the perception of having real interactions and being aware of

others, even while immersed in a digital experience (Pressgrove & Bowman, 2020). Spatial presence, however, is the feeling of being in a real physical environment and a perceptual response to the media systems (Pressgrove & Bowman, 2020). Breves (2020) find that the level of the technology's immersiveness gradually increases the spatial presence, empathic prosocial interaction, and issue involvement of the user (Breves, 2020). Thus, this study hypothesizes that:

H1: Perceived vividness positively influences both (H1a) social presence and (H1b) spatial presence.

H2: Perceived interactivity positively influences both (H2a) social presence and (H2b) spatial presence.

In situations that create arousal, such as new and complex environments (e.g., VR), some individuals prefer to have high levels of stimulation and arousal, while othersclaim for low levels (Zuckerman, 1994). This preference of an individual regarding the level of sensory stimuli is called sensation seeking tendency (Kandaurova & Lee, 2019). Yoo and Drumwright (2018) find that a user's sensation-seeking tendency serves as a moderator when the device type influences donation intention, and that the media effects of VR are stronger for high sensation seekers than for low sensation seekers (Yoo & Drumwright, 2018). Hence, the following hypotheses are proposed:

H3: Participants' sensation-seeking tendency level moderates the effect of perceived interactivity on both (H3a) social presence and (H3b) spatial presence.

H4: Participants' sensation-seeking tendency level moderates the effect of perceived vividness on both (H4a) social presence and (H4b) spatial presence.

The general construct of inspiration is described as an intrinsic motivational state activated by an external trigger that facilitates new possibilities and compels individuals to bring ideas into fruition (Thrash *et al*., 2014). More recently, Böttger and colleagues (2017, p. 117) conceptualize customer inspiration in the marketing as "a customer's temporary motivational state that facilitates the transition from the reception of a marketing-induced idea to the intrinsic pursuit of a consumption-related goal". Since imagery processing may foster inspiration, the characteristics associated with the VR (e.g., level of immersiveness, vividness, interactivity, generating feelings of presence) may predict the frequency and intensity of prospective donors' inspirational experiences. Therefore, this study hypothesizes that

H5: Social presence has a positive effect on customer inspiration.

H6: Spatial presence has a positive effect on customer inspiration.

Hung and Wyer Jr.(2009) suggest that a rich media channel such as VR will have a positive effect on intention to donate. According to Ma (2020), in an immersive storytelling experience with greater immersion, users are more likely to be transported to the story through the perception of being present in the story world (i.e., spatial presence). Similarly, users are also more likely to identify with the story character when they have a greater perception of sharing the same space with the character (i.e., social presence; Ma, 2020). Therefore, stories presented in immersive virtual (vs.traditional mediated) environments lead to a higher level of spatial and social presence. Consequently, the enhanced transportation promotes prosocial attitudes (Ma, 2019). Thus, this study hypothesizes that:

H7: The fundraising campaign video's immersion level moderates the effect of social presence on customer inspiration.

H8: The fundraising campaign video's immersion level moderates the effect of spatial presence on customer inspiration.

As mentioned, inspiration is evoked when an external stimulus leads to the intrinsic pursuit of a consumption-related goal, such as donation intention (Böttger et al., 2017). Rauschnabel and colleagues (2019) argue that it may be difficult to generate inspiration without a sufficient level of realism, suggesting that the richness of the experience will provide more opportunities for individuals to be inspired (Herhausen et al., 2019). In this sense, it has been shown that VR devices provide realistic, vivid, and interactive content that creates both spatial and social presence (e.g., Yoo & Drumwright, 2018; Breves 2020). Hence, considering the existent literature, this study hypothesizes that:

H9: Customer inspiration positively influences donation intention.

H10: The fundraising campaign video's immersion level moderates the effect of customer inspiration on donation intention.

Methodology

Research design

This study incorporated a three group between-subjects experiment with the levelof immersiveness as an independent variable. Therefore, three different conditions for the VR experience were created operationalizing three levels of immersiveness (high vs. moderate vs. low immersiveness). To this end, the participants either watched the stimulus passively on a computer desktop (low immersiveness, "LI"; n = 46) or in two different head-mounted

displays (HMDs). The desktop condition can be understood as a control group. A mobile HMD with an iPhone 11 was used in the moderate immersiveness condition ("MI"; n = 47), and the Oculus Quest was employed in the high immersiveness condition ("HI"; n = 49).

The short documentary "Under the Net" was selected as the stimulus. The video tells the story of Amisa, an 11-year-old girl who lives in the Nyarugusu Refugee Camp, in Tanzania, and is exposed to the grave danger of malaria after escaping from the violence in the Congo (United Nations Foundation, 2017). The United Nations Foundation asks viewers to donate money at the end of the video. After watching the eight-minute video, participants in all three conditions completed a final questionnaire.

Variable and Measurement

The construct measurements were developed by using scales adapted from extant literature and measured on 7-point Likert scales ranging from 1="strongly disagree" to 7="strongly agree"; except for the variable Sensation-seeking tendency, which was measured using a 5-point Likert scale (1="strongly disagree" to 5="strongly agree"). Sensation-seeking tendency was addressed through 8 items based on Hoyle et al., (2002. Perceived vividness (with 2 items), perceived interactivity (with 3 items), and donation intention (with 3 items) were adapted from Yoo and Drumwright (2018). Spatial presence was addressed through 8 items based on Hartmann et al. (2015), whereas social presence (with 4 items) was based on Ma (2020). Additionally, customer inspiration (with 10 items) was adapted from Böttger, et al. (2017).

Results

We first analyzed the measurement model which does not pose any issue regarding factor loading, composite reliability, and convergent validity (average variance extracted higher than 0.5). The measures also present discriminant validity. The non-parametric bootstrapping procedure was conducted to evaluate the structural model relationships. All hypotheses, except H2a, are supported by the results (Table 1). Regarding hypotheses H1a and H1b, the results show $\beta = .75$, t = 6.23, $p < .001$; and $\beta = .77$, t = 5.60, $p < .001$, respectively. Therefore, the more the user perceives the immersive video as interactive, the more will experience both social and spatial presence. H2a is not supported by the results ($\beta = .001$, t = 0.80, $p = .992$), meaning that perceived vividness is not a good predictor for social presence.

Contrarily, H2b is supported (β = .15, t = 0.75, p < .05). Hence, the more the user perceives the immersive video as vivid, the more strongly will experience spatial presence.

Both hypotheses H5 and H6 are supported by the results (β = .37, t = 2.22, p < .05; and β = .35, t = 1.63, p < .05, respectively), and thus, when the user experiences higher levels of social presence as well as higher levels of spatial presence, the level of customer inspiration increases. Hypothesis H7 is also supported by the results (β = .78, t = 14.84, p < .001), meaning that customer inspiration is a good predictor of donation intention. All these direct effects ae shown in Table 1.

Concerning H3 and H4, the two-stage approach for moderator analysis was followed. The results do not support both H3a (β = .02, t = 0.22, p > 0.05) and H3b (β = .01, t = 0.06, p > 0.05); hence, sensation-seeking tendency does not moderate the relationship between perceived interactivity and social presence or the relationship between perceived interactivity and spatial presence. Further, the results do not support both H4a (β = -.01, t = 0.19, p > 0.05) and H4b (β = -.01, t = 0.14, p > 0.05); thus, sensation-seeking tendency does not moderate the relationship between perceived vividness and social presence or the relationship between perceived vividness and spatial presence. Table 2 shows the results of the moderation analysis.

Hypothesis	Relationships	β	Std. Deviation	t-value	p-value
H1a: supported	PI $\rightarrow$ Social Presence	0.748	0.141	6.229	0.000
H1b: supported	PI $\rightarrow$ Spatial Presence	0.766	0.134	5.603	0.000
H2a: not supported	PV $\rightarrow$ Social Presence	0.001	0.165	0.795	0.992
H2b: supported	PV $\rightarrow$ Spatial Presence	0.154	0.158	0.746	0.011
H3: supported	Social Presence $\rightarrow$ CI	0.368	0.207	2.220	0.003
H4: supported	Spatial Presence $\rightarrow$ CI	0.349	0.195	1.629	0.005
H5: supported	CI $\rightarrow$ DI	0.780	0.053	14.841	0.000

Table 1. *Results of the structural model: Direct Effects*

Hypothesis	Relationships	β	t-value	p-value	Bias Corrected Confidence Interval	
					Lower Bound	Upper Bound
	PV → Social Presence	0.01	0.17	0.863	−0.141	0.145
	SST → Social Presence	0.14	2.03	0.042	0.003	0.262
H3a: not supported	PV*SST → Social Presence	−0.02	0.22	0.830	−0.183	0.116
	PV → Spatial Presence	0.16	2.56	0.011	0.034	0.271
	SST → Spatial Presence	0.01	0.24	0.811	−0.077	0.100
H3b: not supported	PV*SST → Spatial Presence	−0.01	0.17	0.867	−0.125	0.097
	PI → Social Presence	0.68	9.45	0.000	0.542	0.820
	SST → Social Presence	0.14	2.03	0.042	0.003	0.262
H4a: not supported	PI*SST → Social Presence	0.01	0.19	0.847	−0.103	0.138
	PI → Spatial Presence	0.76	13.78	0.000	0.657	0.865
	SST → Spatial Presence	0.01	0.24	0.811	−0.077	0.100
H4b: not supported	PI*SST → Spatial Presence	0.01	0.14	0.888	−0.080	0.119

Table 2. *Moderation analysis*

To analyze the moderating effect of video immersiveness on the relationship between customer inspiration and donation intention, the immersion level is considered a moderating factor. In this case, a multigroup analysis procedure was followed. Hence, a comparative two-level of immersion approach was devised, resulting in three comparisons: High Immersion (HI) -Moderate Immersion (MI), High Immersion (HI) -Low Immersion (LI), and Moderate Immersion (MI) -Low Immersion (LI). As noted in Table 3, the relationship between social presence and customer inspiration is significant for both HI ($p=0.023$) and MI ($p=0.008$) conditions and is not for LI ($p=0.872$) condition. The relationship between spatial presence and customer inspiration is significant for MI ($p=0.000$) condition and is not for both HI ($p=0.105$) and LI ($p=0.961$) conditions. Further, the relationship between customer inspiration and donation intention do not indicate a major difference between all immersion levels, i.e., HI, MI, and LI conditions.

Additionally, regarding the differences between groups, the relationship between social presence and customer inspiration, as well as the relationship between spatial presence and customer inspiration, indicates a significant difference between MI and LI conditions (p-values of 0.094 and 0.019, respectively). Similarly, the relationship between customer inspiration and donation intention indicates a significant difference between MI and LI conditions, with a permutation p-value of 0.075 (Table 4). No significant differences were found between HI and LI conditions, or between HI and MI conditions. Thereafter, H8, H9, and H10 are only partially supported.

Relationship		Original sample	Sample mean	Std. Deviation	t-value	*p*-value
Social Presence → CI	HI	0.463	0.420	0.204	2.273	0.023
	MI	0.037	0.056	0.231	0.161	0.872
	LI	0.579	0.613	0.216	2.674	0.008
Spatial Presence → CI	HI	0.314	0.362	0.194	1.621	0.105
	MI	0.755	0.736	0.216	3.497	0.000
	LI	0.011	-0.026	0.218	0.049	0.961
CI → DI	HI	0.792	0.791	0.052	15.320	0.000
	MI	0.858	0.856	0.040	21.463	0.000
	LI	0.706	0.709	0.076	9.342	0.000

Table 3. *Bootstrapping results for HI, MI, and LI separately*

Relationship	Comparison	|diff|	2.5%	97.5%	p-value Permutation
Social Presence → CI	HI vs. MI	0.423	-0.697	0.674	0.255
	HI vs. LI	-0.120	-0.557	0.546	0.733
	MI vs. LI	-0.543	-0.651	0.624	0.094
Spatial Presence → CI	HI vs. MI	-0.440	-0.644	0.659	0.208
	HI vs. LI	0.307	-0.564	0.546	0.310
	MI vs. LI	0.747	-0.632	0.627	0.019
CI → DI	HI vs. MI	-0.066	-0.126	0.123	0.306
	HI vs. LI	0.087	-0.180	0.185	0.349
	MI vs. LI	0.153	-0.162	0.168	0.075

Table 4. *Permutation test path coefficient results*

Conclusions

Regarding theoretical contributions, this study brings attention to the construct of customer inspiration in a non-profit marketing context. The findings presented above provide theoretical discussion, as well as empirical evidence for the positive impact of customer inspiration on donation intention. Hence, this study includes potential donors' inspiration as a new predictor variable of donation intention to the extant literature on non-profit marketing. Second, this study brings into the table the discussion about the moderation effect that the immersion level can have on the relationship between potential donors' inspiration and donation intention. Further, findings indicate that social presence and spatial presence are the

psychological mechanisms that can close the distance between potential donors and the beneficiaries of non-profit fundraising, creating here an opportunity for them to be inspired (Rauschnabel et al., 2019). Third, the study adds theoretical discussion about users' individual difference factors, and users' sensation-seeking tendency, in particular, as a moderating variable, to the extant literature on media richness and presence.

Considering the managerial implications this study found that perceived vividness and perceived interactivity can increase spatial presence, and that social presence can be intensified by perceived interactivity. This posits an important role of media richness on generating a sense of presence. Additionally, findings from this study show that the sense of both social and spatial presence have a significant role in eliciting customer inspiration. Therefore, one way of providing an inspiring experience to prospective donors is to use rich media content, namely immersive technology, which is vivid and interactive, and creates both social presence and spatial presence. Potential donors will feel as if they were actually with faraway beneficiaries of non-profit donations.

Although the results regarding the moderation of the immersion level condition on the relationships between both social and spatial presence and customer inspiration, and between customer inspiration and donation intention, were not what was expected based on the literature review, these findings also reveal that using a device that provides a moderate level of immersion might be enough for accomplishing the final purpose of fundraising. There is very real financial expense, as such high immersion levels provided by more sophisticated VR devices, as the one used in the HI condition, can cost a considerable amount of money. There is also the pragmatic issue of usability, unlike HI hardware. Contrarily, MI hardware is cheaper, more practical, and easier to use, not requiring, for example, dedicated spaces.

Despite the contributions, this study has some limitations that suggest opportunities for future research. The demographics (nationality, age, and gender) did not play an important role in the current research, which limits the study culturally. Further this study added theoretical discussion about only one user's individual difference factor, namely, sensation-seeking tendency, as a moderating variable. In the future, research should explore other individual difference factors that may interact with various media effects and affect the sense of both social and spatial presence. For example, familiarity with new technologies or personal innovativeness.

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