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Power Users' Branded Virtual Reality Experience: A Preliminary Study

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Abstract

Virtual reality advertising campaigns allow consumers to interact with companies in a novel way. This study examined how individual differences in power usage (confidence using technology in innovative and functional ways) and the trust-schema (trustworthiness perception of a company) interact to affect consumers' experience of control, attitudinal outcomes, and behavioral intentions (sharing their VR experience). The findings revealed that power users are more likely to recommend VR experiences, have a positive attitude toward VR experiences, and share their experiences, than non-power users. However, these effects were moderated by consumers' trust-schema levels. Power users were less sensitive to the effect of trust-schema than non-power users. The implications of the findings and future studies on the emerging metaverse were further discussed.

Keywords: Branded Virtual Reality, Power Users, Trust Schema

Introduction

Virtual Reality (VR) technology has become an important part of marketing. It has been successfully used in various industries such as retail (Grewal, et al., 2017), e-commerce (Martínez-Navarro, et al., 2019), and events promotion (Griffin et al., 2017). A recent survey has reported that wider adoption of VR technology is expected (Perkins Coie, 2019); a 2016 Goldman Sachs report showed that VR and related industries were predicted to reach a market of around $80 billion by 2025 (Bellini et al, 2016). With Meta's recent promotion of the metaverse, this prediction is quickly becoming a reality. Thus, the use of VR technology and consumers' behaviors is of both theoretical and practical interest to scholars. This is especially true of Gen Z, a generation born between 1995-2010, who form the majority of current college undergraduate students, and who are involved in virtual reality spaces, making it vital for marketing to appeal to their demographics via VR. Gen Z can most likely integrate VR seamlessly into their daily lives. Some brands have already rolled out their lines for Gen Z gamers in VR (Hackl, 2020).

Previous studies mainly examined how contextual variables within VR (e.g., display quality, latency, animation style) influence consumers' responses to their VR experiences (Martínez-Navarro et al., 2019; Naderi, et al., 2020; Wang et al., 2019). Although VR contextual variables provide useful clues to understand consumers' experiences, individual differences should affect this process and may play a significant role in predicting the effectiveness of commercial VR programs. For instance, as VR environments are novel to many users, individuals who are confident about entering into unknown virtual spaces may respond differently from those who are anxious about them (Jacques, Garger, Brown, & Deale, 2009). Therefore, identifying a factor that would make people feel less anxious about VR environments, especially among those who are not confident in using VR can be an important question. It would also be important to identify what individual differences would make a difference in being more confident in using VR technology. Considering that VR has only recently become widely available to consumers, those who are using VR technology can be viewed as innovators based on Rogers' diffusion of innovations theory (Rogers, 1995, 2003).

In understanding emerging technology (Marathe, Sundar, Nije Bijvank, Van Vugt, and Veldhuis (2007) suggest that we should pay attention to "power users", individuals who have high motivation, expertise, and ability to use technological interfaces. Power usage was originally defined as an individual-level variable that helped explain how people use a wide variety of technologies (Marathe et

al., 2007). However, power users are different from innovators or heavy users in that they use technology differently, not just more frequently or with the newest devices (Appel, 2012). In more recent work, power users have been described as those who use technology more innovatively, efficiently, and thoroughly than ordinary users (Zhong, 2013). As organizations are exploring how to use VR technology in many different ways for various purposes (e.g., education, therapy, entertainment), the concept of power users can deepen our understanding of how individual differences play a role in responses to VR experiences. In addition, in VR environments, individuals may be less certain of what they should expect in novel and unknown virtual spaces. It is possible that power users may be less anxious about different features from VR environments than non-power users (Zhong, 2013). Those who are less likely to be power users may have to rely more on other cues to adapt to VR environments.

In addition, the source of VR contents has been consistently found to influence how individuals process communication and message effectiveness (Metzger, et al., 2010; Shareef, et al., 2019). In this study, sources of VR contents refer to the companies that provide VR content. For example, when IKEA, the multinational furniture, kitchen, and home products retailer, is a source of VR content, individuals will bring their prior existing schema toward IKEA (e.g., whether IKEA is trustworthy or not) into the virtual experience. Any response to the VR experience is likely interpreted through the prism of their schema. Considering that consumers can feel they are stepping into an unknown virtual world, whether they feel the source of the virtual world is trustworthy or not may play an important role (Jacques, et al., 2009). However, the question remains whether power users would rely as heavily on their trust toward the source when experiencing VR, given how they approach technology differently from others (e.g., Kang & Shin, 2016).

While VR helps to create innovative marketing environments, its theoretical significance lies in its ability to provide positive experiences to various consumers, and it is these experiences that lead to forming favorable attitudes and behaviors towards a particular commercial brand. In this study, we attempt to examine how individual differences can influence perceived VR experiences to fill the gap in the VR literature in the context of consumer behaviors. In particular, we focus on the effects of power usage and prior trust-schema on consumers' sense of control in the branded VR space, attitude towards the branded VR experience, and recommendation intention of the branded VR.

Literature Review

Power Usage and Prior Company Schema

Power Users

Power users have been defined as individuals who "use most the features in the devices more innovatively, efficiently, and thoroughly than other users" (Zhong, 2013, p. 1742) and "are highly self-motivated learners who commit greater effort to discovery and experience frustration if restricted or given little learning autonomy" (Sundar & Marathe, 2010, p. 305). This is distinct from heavy users, who spend lots of time with technology, and early adopters, who seek out cutting edge innovations (Appel, 2012). Power users have been shown to prefer digital systems that include many customization options because they favor having control over their experiences (Sundar & Marathe, 2010). In addition, they are found to have personality traits like innovativeness and media multitasking and tend to be younger in age (Zhong, 2013). In recent work, some researchers have measured device-specific power usage (see Kang & Shin, 2016), but evidence suggests both device-specific and general measurements of power usage similarly predict outcomes like personalization preference and security behaviors (Kang & Shin, 2016). In line with the original conceptualization of power usage, this study measures general power usage and treats the concept as a personality trait that varies across individuals, not within individuals across devices (Marathe et al., 2007; Sundar & Marathe, 2010).

In contrast, simplicity is better for non-power users. Non-power users lack technical expertise, tend to have lower levels of technological efficacy, and would rather have fewer options to customize technical interfaces and experiences (Marathe et al., 2007; Sundar & Marathe, 2010). Having too many choices, in fact, is likely to be a barrier to positive user experiences for non-power users. They prefer systems that are already personalized and function without many prompts for user input (Oh & Sundar, 2019; Sundar, et al., 2012). Although it has not yet been empirically tested, these patterns suggest power users are better able to adapt to new technologies than non-power users because of their motivations to use technology, belief in their abilities, actual expertise, and prior positive experiences.

Beyond general outlook toward technology, power user status has also been shown to affect online relationships. Power users are seen as a benefit in online communities because they can identify high-quality information and effectively sort through spam or noisy data (Lü, Zhang, et al., 2011; Volkoff, et al., 2004). Their expertise often elevates them to leader-status on technical areas and they tend to attract many followers in online spaces (Noh, Oh, & Lee, 2018). However, power users are not beneficial just because of their many

connections. Instead, their impact relies heavily on the trust a community puts in their expertise (Noh et al., 2018). Many power users are active technological leaders and trusted in their online communities (Lü et al., 2011).

Even though power users have technical expertise, they are not necessarily more careful in their behaviors. Several studies have shown power users eschew privacy concerns in favor of customization options (Kang & Shin, 2016; Sundar & Marathe, 2010). Power users are just as likely to download applications with a high privacy and security risk as non-power users because they favor exploring technical systems and personalizing their technologies, in spite of risk (Mylonas, et al., 2013). This acceptance of risk, however, can have a positive effect on power user's experience with new technology. Power users have been shown to express more positive attitudes toward unfamiliar technology like virtual chat agents and report intention to use new technology after limited experiences (Gambino, et al., 2019).

Power users, when asked to explore a new system such as a VR experience, will likely explore the system, look for ways to customize their experience, and push the technology to its limits, which requires in-depth engagement with VR technology and VR experiences. Therefore, it could be speculated that power users may engage with VR contents and technological features on a deeper level. On the other hand, systems that are simple to understand and operate may be preferred by non-power users. Further, power users are more comfortable manipulating technology devices and have the skills to cope with higher levels of uncertainty about features provided by new technologies. These traits may help them experience less cognitive difficulties in utilizing all features in new VR environments. With fewer limitations, power users are more likely to feel in control of the VR experience (Zhong, 2013). As a result, they would feel more engaged with the VR contents.

Individual-level traits, like power usage, are doubly important in understanding potential effects of content presented in the metaverse because there are now fewer technical differences between VR experiences. In the early development of VR, much research attention was focused on technical barriers to high-quality experiences like haptic feedback (Adams & Hannaford, 1999), realism (Milgram, et al., 1995), and latency in response to user input (Milgram et al., 1995). When any of these aspects of the experience fail, the quality of the VR experience is greatly reduced. However, with standardization of mass-produced equipment and powerful development tools widely available with built-in solutions to the most common technical issues, these differences are largely solved for

modern applications of head-mounted displays for virtual reality technology. When comparing the effects of these technical improvements in a meta-analysis, Cummings and Bailenson (2016) found that technological immersion features like better graphics and audio only moderately impacted a user's sense of presence. As long as VR experiences maintain functional fidelity, users can see past other feature limitations (Hochberg, 1962 as cited in Cummings & Bailenson, 2016). Just as page load times are important on the internet but now only noticed when a site breaks, differences in technical implementation and realistic graphics in VR are quickly becoming less relevant.

Prior Company Schema: Source-Trust toward a Brand

When a new type of media technology emerges, it is important to gain people's trust to have them engage with the new technology (Ess, 2010). Without a sufficient level of trust, individuals are less motivated to be involved with new media technology and may be less able to process its content in depth. In the context of a company's usage of VR, consumers hold existing schema toward a company, such as whether the company is trustworthy or not. Consumers are active processors in that they encode, store, or retrieve information based on social knowledge in the form of schemas or categories (Taylor & Crocker, 1980). Consumers' schema toward a company could be developed based on their various experiences with the company's products or communication messages from the company. It has been documented that consumers evaluate ad messages based on their own schema. These findings, applied to the context of a company's VR experiences, suggest consumers' VR experiences would be different based on their prior schema toward the company. An individual's prior schema can provide structures to make sense of new information by reducing the flow of incoming information, preventing cognitive chaos.

VR can provide a unique and uncertain context that most consumers have not often experienced. Therefore, consumers may attempt to find a way to ease or to make sense of unknown VR experiences. It is plausible that consumers' prior schema toward the company may become the basis to make sense of the VR environment and subsequently inform their behavioral intentions (e.g., sharing behavior). The Jacques et al. (2009) study implies that those who do not trust the source tend to evaluate the environment more negatively when it is difficult to monitor or to control. That is, perceived levels of trust toward the brand VR source can influence individuals' evaluations of VR contents either positively or negatively. Therefore, particularly, whether the company is trustworthy or not can be relevant schema because the source of the virtual world can influence their experiences, helping them to feel less uncertain about

the unknown experiences (Jacques, et al, 2009).

In this study, prior company schema (trust toward source) in terms of whether consumers perceive the company providing the VR experiences as trustworthy or not (trustworthy-schema) will be examined. We propose that the trustworthy-schema toward the company can be used for consumers to make sense of uncertain VR experiences. In this paper, the terms of trust toward source or trustworthy-schema will be used interchangeably.

Hypotheses Development

Control over VR Experiences

In interacting with a new technology environment, the sense of control, "the potential for the user to modify her environment" (Klein, 2003), in the environment is important to ensure the efficiency of an interaction between a user and any technology-mediated application (Jeunet, et al., 2018). In order to enable learning, users should feel a certain level of control when interacting with it (Jeunet, et al., 2016; Jeunet et al., 2018). Further, a sense of control provides satisfaction ensuring that both communication parties have access to interact reciprocally and synchronously (Liu, 2003). Nevertheless, few studies have examined what influences the sense of control in the VR context (although see Jeunet et al, 2018).

Considering the relationship between trust and uncertainty discussed above, it is plausible that when they find the VR context more credible, they would perceive a lower barrier to control the VR environment. If individuals perceive barriers to interact with the VR environments, individuals should be able to overcome them. This paper proposes that the barriers can be relevant to their existing schema toward the company providing the VR experiences. For example, De Meulenaer, Pelsmacker, and Dens (2017) found that individuals perceive a greater efficacy, resulting in a higher message compliance when they perceive a source of the health communication message as credible. Applying to the current study, when individuals have less trust toward a source of VR content, it would function as a barrier for them to interact with the VR content. At the same time, if a person does not feel confident with using a new technology, it can function as a barrier for the person to feel in control with the VR environment. Accordingly, individuals may feel uncomfortable in the VR environment if they cannot overcome the barriers and attempt to find a way to overcome the discomfort or barriers (Sharifi & Esfidani, 2014). This study explores whether trust toward source and power usage can complement each other to overcome the barrier via an interaction between the two. When non-power users are not confident with a new technology, they may rely more on a source of the VR. If they do not trust the source, they

would feel less certain about the VR environment, and rely on own characteristic relevant to the new technology usage. On the other hand, it is plausible that power users are more likely to engage with the VR contents more in-depth. As a result, they would rely less on the source information in evaluating VR experiences (Chaiken & Maheswaran, 1994). Based on the discussions, the following research question and hypotheses are proposed.

H1: Those with a higher trustworthy-schema toward the company will be more likely to feel a sense of control into the VR environment than those with a lower trustworthy-schema.

H1: High power users will be more likely to perceive a sense of control in the VR environment than low power users.

RQ1: How do the effects of power usage levels influence the levels of a sense of control differently based on levels of trustworthy-schema?

Attitude toward branded VR content

According to the self-expressive model, it is plausible that consumers tend to have favorable attitudinal and behavioral responses when they find perceived stimuli is congruent to self-belief or self-value (Chang, 2014). Decades of research have suggested that different people develop liking or disliking toward an object based on different reasons. Individuals tend to develop positive attitudes toward objects that produce positive rewards. However, they may form negative attitudes toward objects that produce negative punishments. Eventually, attitudes can facilitate their decision making. Attitudes also help people express their self-concepts, underlying values, orientation, and personalities (Chang, 2014). Therefore, attitude toward the company's VR can be influenced by individual differences, such as prior company schema and power usage levels.

H3: Those with a higher trustworthy-schema toward a company will be more likely to form positive attitude towards its branded VR than those with a lower trustworthy-schema.

H4: High power users will be more likely to form positive attitudes towards the company's branded VR than low power users.

RQ2: How do the effects of power usage levels influence the attitude towards the company's branded VR differently based on levels of trustworthy-schema?

Behavioral Intention: Share and Recommendation

Advertisers' important goal in their campaign is whether their ads are shareable. Consumers' sharing behaviors can maximize the effectiveness of the campaign. Sharing behavior of a company's

campaign is related to the notion of word-of-mouth. A great deal of research has demonstrated that word-of-mouth affects choice, diffusion, and sales. Consumers are more likely to buy products that their friends recommend (Leskovec, et al., 2007), and doctors are more likely to prescribe prescription drugs that other doctors whom they know have prescribed previously (Iyengar, et al., 2011). Similarly, word of mouth and online reviews have been shown to foster information spreading (Goldenberg, et al., 2001), boost new customer acquisitions (Schmitt, et al., 2011), and increase sales in various product categories (Chevalier & Mayzlin, 2006; Godes & Mayzlin, 2009). Therefore, consumers' sharing behavior or recommending behavior can be a desirable outcome of the company's VR program. To be shareable, products need to be credible, informative with higher information value, and interesting to be talked about (Dye, 2000; Hughes, 2005).

H5: Those with a higher trustworthy-schema toward the company will be more likely to (1) share and (2) recommend their VR experience than those with a lower trustworthy-schema.

H6: High power users will be more likely to (1) share and (2) recommend their VR environment than low power users.

RQ3: How do the effects of power usage levels influence (1) sharing intention and (2) recommending intention differently based on levels of trustworthy-schema?

Methods

Participants and Apparatus

Participants were undergraduate students from a university in the Northwest who volunteered to participate in the study in exchange for extra course credit or in partial fulfillment of a class research requirement. Considering that advertisers utilizing VR technology are most likely to consider Z-Gen, college students who belong to the generation, as an important target segment, college students were chosen to be participants for the current study. Even though college students might not be direct target consumers for some brands, they are a crucial target segment regarding their potential buying power for the future. For example, even though college students might not be a major target consumer segment for kitchen products, after graduating from their colleges, they will become an important target segment for brands. The sample consisted of 46 females and 23 males (age M = 21.42, age SD = 3.50). Among respondents, 62.75% of the participants reported that they have not tried VR before while 25.50% reported that they have tried VR once or twice.

The study was conducted using a custom high-performance desktop computer with an AMD Radeon RX 480 graphics card and an Intel

i5-6600K processor. Steam, a popular program to download and run virtual games software (Prescott, 2019), was installed on the computer and used to run an HTC Vive virtual reality headset. The VR hardware included the VR headset with comfort strap, two hand-held, motion tracked controls, and integrated headphones. The HTC Vive is commercially available and more information can be found on the Vive website (HTC Corporation, 2019). The HTC Vive was configured for a room-scale experience with a 5-meter by 5-meter play area that tracked the motion of the participant while tracking the motion of the controllers.

Design and Procedure

The game used as the VR commercial environment was “IKEA VR Experience” (IKEA Communications AB, 2016). It was developed by Allegorithmic in collaboration with IKEA Communication AB using Unreal Engine 4 and released on the Steam platform in 2016 (IKEA, 2016). The game places the player in a realistic, life-size replica of a kitchen with IKEA appliances and furnishings. Players can walk around the play area and explore the environment using a teleportation mechanic. The digital kitchen is roughly 6-meters by 8-meters and includes a sink, double oven, stovetop, and a variety of cupboards and draws some of which the user can open. Inside the draws are cooking utensils that can be picked up by the player. In the IKEA VR Experience, players can cook IKEA’s signature meatballs on the stovetop, bake cinnamon rolls in the oven, view an IKEA catalogue, and pick up and move various cooking utensils and household objects. There are more functionalities available in the game, but they were not used for this study (see Figure 1).

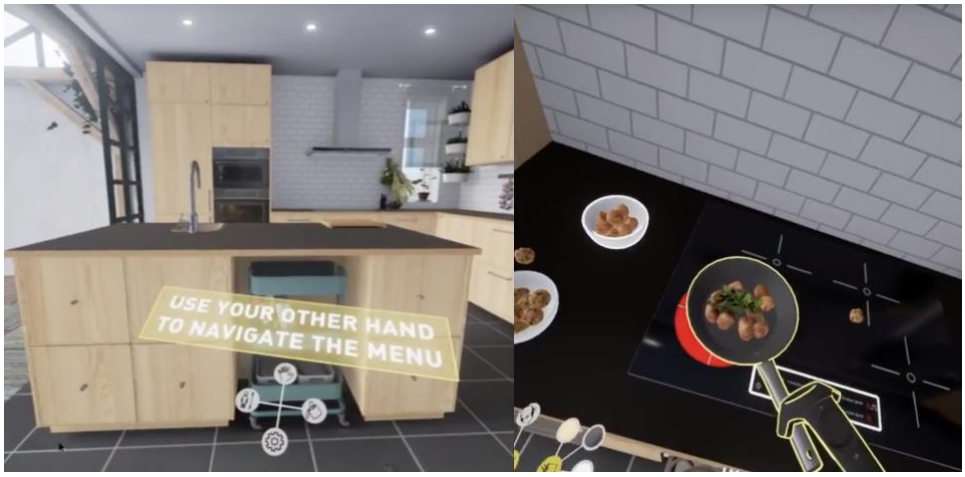

Figure 1. Design of IKEA VR Experience

Participants arrived at the VR lab and completed a pretest questionnaire that collected their attitudes towards IKEA. The research team then helped participants put on the VR headset and explained how to use controllers. Participants were instructed to

explore the IKEA kitchen, cook meatballs, and bake cinnamon rolls. After the gameplay, participants were instructed to remove the headset and complete a posttest survey asking about their control, attitude, power usage, and sharing intention. The entire study required 40 minutes to complete for each participant.

Measures

Power Usage

Power users can understand new information technologies in depth (Marathe et al., 2007). In particular, power usage has been mostly used to assess their usage levels of information and communication technology such as smartphone technology (Kang & Shin, 2016), online news website (Sundar & Marathe, 2010), and Internet of things (Kang & Kim, 2020). In the same vein, this study used a scale of power usage (Kang & Shin, 2016) in the context of VR technology. Scales included items, such as "I make good use of most of the features available in any technological device," "Using any technological device comes easy to me." Participants responded to these items on a seven-point Likert scale, ranging from strongly disagree to strongly agree. The 12-item power usage scales, however, showed a low level of one-dimensionality with our sample. The authors selected seven items out of twelve that achieve one-dimensionality (see Appendix A). Reliability among three items was acceptable, Cronbach's α = .88. Participants who reported higher than the mean score were considered as power users and others were considered as non-power users, following the procedure in Sundar & Marathe (2010).

Brand Trust-Schema

Prior brand trust-schema toward IKEA was measured using a seven-point Likert scale, adapted from the Delgado-Ballester and Munuera-Aleman (2001) study. Participants were asked to think about IKEA and rate it on three items: "I trust IKEA", "IKEA is a reputable company", and "IKEA is honest". Reliability among three items was acceptable, Cronbach's α = .931. Participants who reported higher than the mean score were considered as high trust schema group and others were considered as low trust schema group.

Control

Control describes a user's ability to voluntarily participate in and instrumentally influence communication. The following three items on seven-point Likert scale were used to measure control, "While I was in the virtual IKEA, I could choose freely what I wanted to do," "I felt I had a lot of control over my visiting experiences in the virtual IKEA," and "While doing the virtual IKEA, my actions decided the kind of experiences I got" (Cronbach's α = .78) (Chen & Lin, 2014).

Attitiude

Attitude toward IKEA's VR was measured with three items adopted from Blair and Shimp (1992). Scales include items such as "The IKEA's VR is appealing to me." The items were measured on a seven-point Likert scale, ranging from strongly disagree to strongly agree. Reliability among the three items was acceptable (Cronbach's α = .86).

Sharing Intention

Sharing intention was measured using three items adapted from Kim and Johnson (2016). Participants responded on a seven-point Likert type scales to items such as "I would like to share my experience with the virtual IKEA to my friends," "I would like to share my experience with the virtual IKEA to others," and "I would like to share my experience with the virtual IKEA on my social media." Reliability among items was acceptable (Cronbach's α = .84).

Recommendation Intention

Recommendation intention was measured using three items adapted from Kim and Johnson (2016). Participants responded on a seven-point Likert type scales to items such as, "I would like to recommend the virtual IKEA to my friends," "I would recommend the virtual IKEA to others," and "If a friend asks me about the virtual IKEA, I would recommend them to try." Reliability among items was acceptable (Cronbach's α = .93). All survey items are summarized in Appendix A.

Results

In this study, we examined how individual differences (perceived trust toward source and power usage) influence consumers' branded VR experiences. Further, how different types of individual differences can interact was investigated, expanding previous studies' findings on power users and source information in the unique context of branded VR. The findings of this study reveal that as participants had more trustworthy-schema toward the company, they were more likely to recommend the branded VR experiences. Therefore, the findings suggest that consumers are indeed active processors of VR experiences as their experience is based, in part, on prior knowledge in the form of company trust-schemas (Taylor & Crocker, 1980). It is plausible that if they do not perceive the company is trustworthy, they seem to become more diagnostic and become more critical toward the VR experiences, which will increase cognitive resources and intervene their willingness to recommend. Power users were also more likely to have positive attitudes toward VR experiences, and willingness to share or recommend than non-powers.

However, it should be noted that among power users, the prior

trustworthy-schema toward the company did not play an important role in controlling the VR environment or attitude toward the VR experiences. That is, this study's participants seem to be concerned whether the company providing VR experiences is trustworthy or not only when they are non-power users. It is also worthwhile to note that power users seem to rely on the company schema to a lesser degree. That is, non-power users may not feel competent enough to control over the VR contexts without first assuring that the company providing the VR experiences is trustful. It will be worthwhile to consider that trust is a part of the dimensions of source credibility, including trustworthiness, expertise, and attractiveness (Goldsmith, et al., 2000). This study suggests that source credibility of the VR content may also play an important role in consumer responses, but only among non-power users. Power users, on the other hand, may see branded VR as just another virtual experience which results in the same level of control despite their level of trustworthy schema of the company.

The finding supports that power users may be less careful of sources than non-power users (Sundar & Marathe, 2010). For example, power users are more likely to try risky software from less credible sources because they feel able to deal with negative consequences. As a result, power users may be less sensitive to the brand trust-schema. Another explanation can be that power users are likely to engage with VR content in-depth. As a result, as deeply engaged consumers, they would rely less on a source of information, trust-schema (Chaiken & Maheswaran, 1994). In this line of thought, in future studies, it would be interesting to examine other components of source credibility (e.g., expertise and attractiveness). For example, future studies may want to examine the effects of perceived expertise of a brand regarding business or innovativeness in using technology on VR experiences. Individuals seem to process two prior information (technology and trustworthy-schema toward a brand) exhaustively in experiencing a company's VR. When power usage is high, the effects of prior perception of trust disappear. Those with high power users probably pay more attention to the VR platforms since they are highly motivated to use new technology and consider how to use it in a functional way. Therefore, it seems power users seem to experience VR through the technology-schema (e.g., expertise in technical innovativeness) rather than trust-schema unlike low power users.

Each schema seems to guide their attitude, behavioral intention, and controllable experiences in the VR context. This study expands previous studies that not only modality of technology (e.g., screen size) but also prior knowledge and schemas before being exposed to the VR, can influence how much they would feel controllable in the

VR brand environment. The results suggest prior brand perception (trust) and power usage of technology may compensate each other to process information more effectively. Consumers might be indeed cognitive misers that look for a shortcut in making sense of new stimuli (Lee, Yoon, & O'Donnelle, 2018).

Discussion

Theoretical and Practical Implications

This study's findings add to the existing VR literature that focus on the effects of contextual cues on VR experiences (Martínez-Navarro et al., 2019; Naderi, et al., 2020; Wang et al., 2019). Before walking into VR spaces, individuals may have different mindsets that can influence their VR experience. These differences should affect environments where individuals interact with contextual cues. This study also contributes to expanding the branded VR literature by considering individual differences that have been examined in other contexts such as virtual learning. For instance, individuals' spatial abilities or executive functions are found to affect individual variability in VR learning (Li, et al., 2020). This suggests the significance of an integrative approach in understanding consumers' branded VR experiences.

This study's findings also contribute to theoretical understanding of content effects through the metaverse. When individuals are deeply engaged with a media technology, they may go through the central processing route in experiencing a branded VR. As a result, they are less likely to rely on source information. Therefore, it implies that future studies may want to examine if the elaboration likelihood model can be applicable to understanding individuals' branded VR experiences. Previous studies have documented that when individuals are deeply engaged with the message topics, they tend not to rely on whether the message source is credible or not (e.g., Chaiken & Maheswaran, 1994). However, few studies have examined the effects of engagement levels with media technology, where experiences occur (e.g., video games on computers or video games on VR) on processing messages. This study calls for a future study in this area (e.g., whether elaboration likelihood model (ELM) can be applicable in understanding VR experiences).

As more individuals and brands explore the metaverse through VR, these findings related to individual differences will help guide two theoretical and practical applications. First, the initial wave of VR adoption and metaverse exploration has already begun. These early adopters are a unique audience who are likely higher on the power usage scale. Brands attempting to engage this audience should recognize strategies that are effective for early adopters may not be effective for later adopters. Further descriptive research should seek

to identify when the metaverse audience shifts to include users lower on the power usage scale. Second, VR experiences are unlikely to change attitudes of brand loyalists. However, for those who do not already have a high trust in a brand, power users may appreciate and form a more positive opinion of brands that engage in VR spaces. Joining the cutting edge of technology may be sufficient to win over new fans and have them recommend and share experiences when non-power users would not. This opportunity may be double-edged. Power users who trust brands are likely to expect high-quality experiences. If these experiences do not meet expectations, power user brand loyalists are likely to feel a lower sense of control of the experience and may not choose to keep engaging in experiences that are not able to be personalized to meet the user's goals.

Further, the variance in power usage levels among college students (who can be classified as Gen Z) gives important implications to study power users. It has been mainly documented that Gen Z, a digital native, is automatically motivated to use and learn new technology easily (Mastroianni, 2016). However, practitioners should be aware that there can be variations in power usage levels even among Gen Z. Aforementioned, power users are more likely to look for ways to customize their experience of a new technology (Lü et al., 2011). Therefore, companies who want to incorporate VR in their campaigns may want to consider developing a strategy that high power users can customize their experiences in VR. This study finding suggests that this strategy with customization options in VR and targeting high power users can be particularly effective if the company wants to promote sales from their loyal customers.

Companies today are also adopting augmented reality (AR) platforms. For example, IKEA promotes purchases by utilizing its AR in-home furniture tryout app, allowing them to add augmented reality versions of items to their own room on their mobile device screens (Bernard, 2018). It would be important to examine if the present study findings are applicable in different media contexts, such as AR.

Further, it should be noted that in today's world, people are more accessible to technologies, but they access digital information in a wide variety of ways. As the current study examined, levels of power usage can influence responses to a company's VR. Digital literacy that increases self-efficacy in using new technologies and how to empower them to use technology effectively can be an important task (Warschauer, 2003) as companies may try to use high-end technologies to engage with consumers in a subtle way. Practitioners who are interested in utilizing VR technology may also want to pay attention if non-power users can properly understand companies'

marketing efforts on new technology platforms. Or they may just rely on a cue available to them instead of fully engaging with the contents, as this study finding implies.

Future Studies and Limitations

This study is limited in a few ways, including the fact that we only examined product-related behavioral intentions (e.g., recommendation and sharing intention) right after participants' VR experience. Thus, we were unable to assess the long-term effects of participants' VR experience on their actual behavior. Future research will require a follow-up survey so that the effectiveness of commercial VR experience on consumers' behaviors can be examined. Also, most of the participants had little VR experience prior to this study. While this allows us to control individual differences and produce reliable results, feelings of novelty and excitement might have affected participants' responses. More and more people will be exposed to VR as VR marketing is becoming popular. Future work will need to consider consumers who are familiar with VR to elaborate the mechanism of VR marketing. The lack of generalizability is another limitation of this study. We only examined the VR created by a specific industry company, IKEA with a low sample (46 females and 23 males). Whether the findings from this study can be applicable to other industries, such as the automobile industry would be of practical use to other business industries. Further, if the findings presented in this study will be replicated with a larger number of participants should be also investigated in future.

In future studies, it will be important to gain further insights on power and non-power users, such as the demographic differences between power and non-power users, particularly along lines of social class and economic level. This study also did not examine the role of haptics and VR (Parisi, 2018), which will be important to consider examining effects of the degree of realism in consumer responses. Future study should investigate how power users and non-power users might respond to VR simulations differently based on VR context and content.

Conclusion

This study shows the role of individual differences in responding to branded VR experiences. The findings suggest that a company's trustworthy image is important for a successful VR program. Consumers can overcome uncertainty about new experiences in virtual spaces when they hold a schema that the company is trustworthy. The analyses also support Zhong (2013) that power users can deal with uncertainty in new technology environments more effectively, as a result, even when they hold a low level of

trustworthy schema, they were still able to have a positive attitude toward the company's VR.

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Figures and Tables

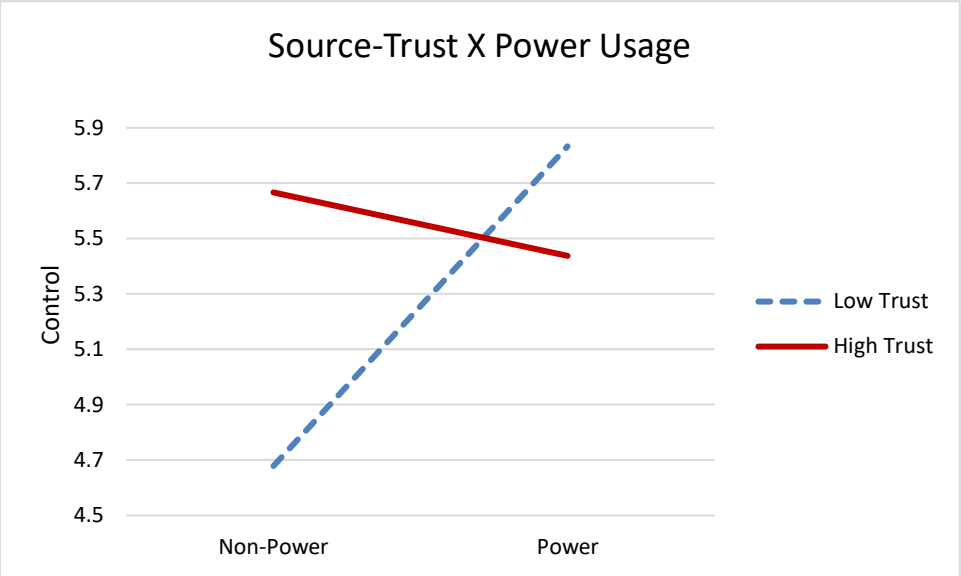

Figure 2. Interactions between prior perception of the company (Trust) and power usage on control.

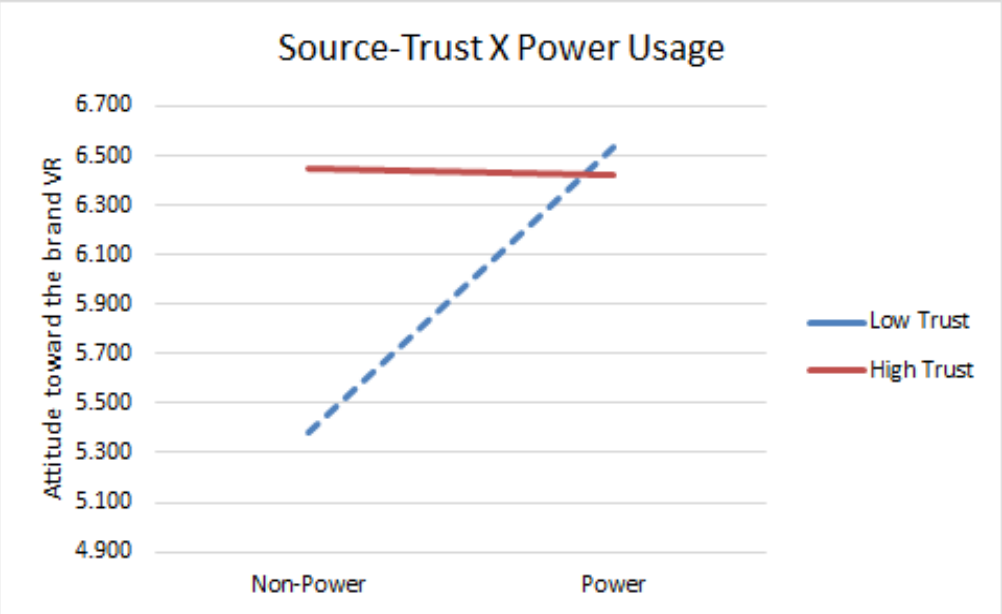

Figure 3. Interactions between prior perception of the company (Trust) and power usage on attitude toward IKEA VR.

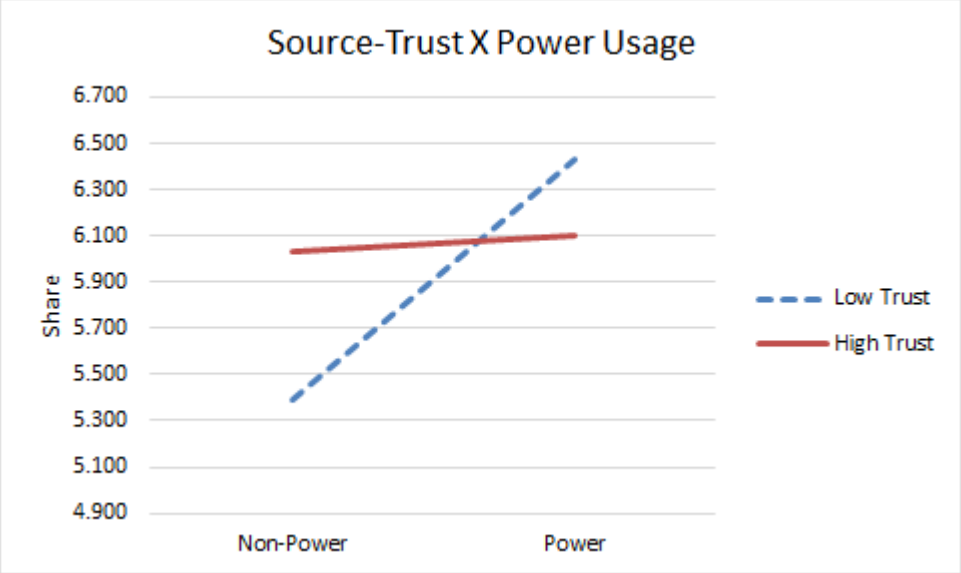

Figure 4. Interactions between prior perception of the company (Trust) and power usage on share.

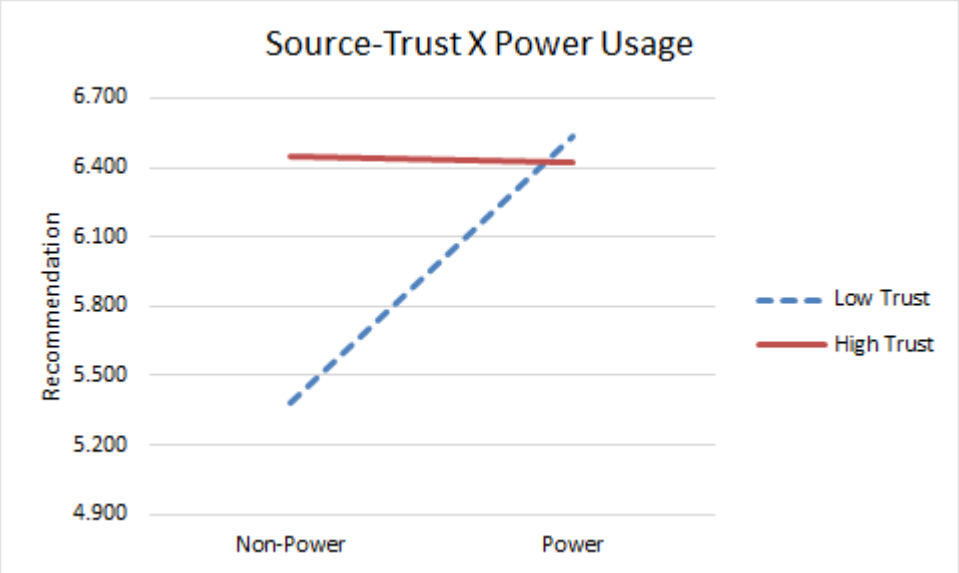

Figure 5. Interactions between prior perception of the company (Trust) and power usage on recommendation.

Table 1: Descriptive Analyses of Control, Attitude toward the IKEA VR, Share, and Recommend

Power	Trust	Control	VR_{Att}	Share	Recommend
Non-Power	Low	4.68(.62)	5.21(1.25)	5.39 (1.06)	5.38(1.23)
	High	5.62(1.26)	6.20(.74)	6.03(.99)	6.44(.67)
Power	Low	5.71(.94)	6.62(.50)	6.43(.59)	6.53(.74)
	High	5.39(1.10)	6.39(.71)	6.10(.86)	6.42(.71)

Table 2: Pairwise comparison test for dependent variables

	Control		VR_{Att}		Share		Recommend	
	F	η^2	F	η^2	F	η^2	F	η^2
Non-Power	6.13***	.69	10.45***	.89	3.78***	.06	11.53***	.15
Power	.91	.16	.75	.14	1.28	.02	.16	.00

Note. each F tests the simple effects of source-trustworthiness within each level combination of the other effects shown, * p< 0.05. ***p< 0.001

Appendix A

Survey Measure Items

(*A seven-point Likert scales)*

Power Usage

I make good use of most of the features available in any technological device.

I love exploring all the features that any technological gadget has to offer.

I often find myself using many technological devices simultaneously (multitasking).

Using any technological device comes easy to me.

I feel like information technology is a part of my daily life.

Using information technology improves my productivity.

Brand trust-schema

I trust IKEA

IKEA is a reputable company

IKEA is honest

Control

While I was in the virtual IKEA, I could choose freely what I wanted to do.

I felt I had a lot of control over my visiting experiences in the virtual IKEA.

While doing the virtual IKEA, my actions decided the kind of experiences I got.

Attitude

The IKEA's VR is appealing to me.

The IKEA's VR is attractive to me.

The IKEA's VR is interesting to me.

Sharing intention

I would like to share my experience with the virtual IKEA to my friends.

I would like to share my experience with the virtual IKEA to others.

I would like to share my experience with the virtual IKEA on my social media.

Recommendation intention

I would like to recommend the virtual IKEA to my friends.

I would recommend the virtual IKEA to others.

If a friend asks me about the virtual IKEA, I would recommend them to try.