Selective Influence of Virtual Reality Technologies in Spectator Sports

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1:30-1:55 PM, Illinois River **(including questions)**

Introduction

Understanding technological innovation is essential for marketers in that it is a powerful engine that generates a new market (Sood & Tellis, 2005). In the sports media industry, virtual reality (VR) devices have been adopted as a new medium for watching sports and is making a new marketplace (Slater, 2014). As a result, virtual reality spectatorship (VRS) in sport has been growing (Kim & Ko, 2019). To understand the impact of new technology in spectator sports, this study aims to investigate the effect of VR technology in spectator sports in terms of inducing flow and emotion dynamics for spectators. Accordingly, this study examines i) the effect of involvement and past VR experience on spectators' flow experience and ii) the relationship between flow and emotion dynamics on spectators' satisfaction.

Theoretical background and hypotheses

Spectators often experience flow when they are fully concentrated and immersed in spectatorship activity (Chang, Wann, & Inoue, 2018). To experience flow, spectators should be fully engaged, deeply involved, and intrinsically motivated to activity (Csikszentmihalyi, 1990). Previous studies have shown that VR device could induce users' flow experience by giving a sense of presence (Bian et al., 2016). However, flow experience when using VR devices is not solely influenced by technological features but also depends on individual characteristics (Shin, 2018). In sport spectatorship context, involvement with a team/league is the most influential individual characteristics (Ko, Chang, Jang, Sagas, & Spengler, 2017). Highly involved people are more likely to be engaged, involved, and motivated in spectatorship (Ko et al., 2017) and are more likely to experience flow (Chang et al., 2018). Therefore, we expect that:

H1: Involvement with teams/leagues positively influences spectator's flow experience using VR.

Unlike other disciplines that produce an illusion of perception to make virtual reality (Slater, 2014), the ultimate goal of VRS is to accurately simulate actual reality (i.e., real attendance on venues). However, it is infeasible to simulate exact reality as long as laws of physics are applied (Slater & Sanchez-Vives, 2016). Also, there are common negative outcomes such as motion sickness (Munafo, Diedrick, & Stoffregen, 2017), physical discomfort (Goh, Lee, & Razikin, 2016) when using VR devices for a long time. Thus, there is a significant limitation in VRS. On top of that, repeated exposure to the same stimulus (i.e., sensory information) triggers satiation (Redden & Galak, 2013) and negative emotions such as tediousness and fatigue which negatively influence flow experience (Chang et al., 2018). Chen, Lu, & Luo (2018) suggested that the positive impact of VR on flow is caused by little experience and curiosity on new technology. Therefore, it is hypothesized that:

H2: The flow experience induced by devices decreases as the experience of VR devices increases.

The effect of VR devices on flow experience is stronger for less-involved people than for highly involved people (Kim & Ko, 2019). It is because less-involved people would focus more on new medium technology (peripheral cues) rather than the game itself (central cues) (Petty & Cacioppo, 1986). In the same vein, we expect that the decreased effect of VR devices is expected to be stronger for less-involved people. Therefore, we posit that:

H3: Spectators with low team/league involvement show a greater decrease on VR device induced flow when they have a past VR experience compared to highly involved spectators.

In conventional research, the evaluation of emotional experience has been focused on emotion valence (Forgas, 1995). Recently, scholars found that it is also crucial to apprehend emotional intensity (high vs. low) to fully appreciate an emotional experience (Aurier & Guintcheva, 2015). Especially in media consumption context, Aurier and Guintcheva (2015) suggested that it is emotion dynamics that affect spectators' overall evaluation on the experience. Nevertheless, little research has been done in VRS context with emotion dynamics. The flow experience often improves emotions dynamics by affecting valence and intensity (Madrigal & Chen, 2008). Furthermore, recent evidence suggests that VR devices evoke a positive and negative emotion to users (Lin, 2017) and enhance the intensity of main emotion (Kourouthanassis, Boletsis, Bardaki, & Chasanidou, 2014). Therefore, we expect that:

H4: The flow experience using VR devices positively influences emotion dynamics.

In the context of entertainment consumption experience, the temporal dynamics of emotion brings satisfaction by giving second-order emotions (Aurier & Guintcheva, 2015) or eudaimonic motivation (Oliver & Raney, 2011). When watching sports games, emotion dynamics also contribute to spectators' satisfaction (Kim, Magnusen, & Lee, 2017). Therefore, it is expected that:

H5: Experienced emotion dynamics (formed through VR induced flow experiences) positively influence spectators' satisfaction and future consumption intentions.

Methods

The participants were university students and recruited from the public setting at a large university. They were first asked to indicate current emotion state on the modified affect grid (Russell, Weiss, & Mendelsohn, 1989) combined with the self-assessment manikin (Bradley & Lang, 1994). Then, they randomly watched four different NBA game highlights for five minutes using Oculus Go. As soon as the game ends, the participants were asked to indicate current emotion state over again. Next, the online survey was distributed with a series of adapted measures including team/league involvement (Wann, 2002), past VR experience (Kent & Allen, 1994), flow experience induced by VR (Novak, Hoffman, & Yung, 2000), emotion reactivity (Nock, Wedig, Holmberg, & Hooley, 2008), satisfaction (David, Bagozzi, & Warshaw, 1992).

Results & Discussion

To test the research hypotheses, we will conduct a conditional PROCESS analysis using Hayes Model 7 (Hayes, 2012) along with follow-up analysis of variances. We are currently collecting the data by targeting 200 participants and will ensure that we present the results at the conference. The current study is designed to develop our theoretical understanding of VRS. In particular, it is expected that the results would demonstrate how VR technologies could help enrich fans' emotion dynamics as well as develop a strong fan base for professional sports teams. Further theoretical and practical implications will be presented.