Development of a scale to measure differences in gamer experiences in sport video games

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Aim of paper and research questions

Advertising in sport video games has been growing. While gamer experience can affect sponsorship effectiveness, there has been lack of research on such impacts, mainly due to the lack of a measurement scale. As a preliminary research, this study defined and conceptualised a six dimensional scale measuring gamers' different experiences during sport video games. Using this scale, it will be possible to examine differences in gamer experience across sports video games. More importantly, it will be possible to examine the relationship between gamer experience and sponsorship effectiveness in future studies using this scale.

Literature review

Poels et al. (2007) initially categorised gaming experiences into enjoyment, flow, immersion, suspense, competence, negative affect, control and social presence. This was later developed into the Game Experience Questionnaire (Herrewijn & Poels, 2013). This comprise Challenge which measures the stimulation players perceive and the amount of effort they have to put into the game; Competence which refers to how successful and skillful people feel while playing a game; Tension which measures the degree to which players feel frustrated and annoyed; Flow which indicates the experience of being absorbed into the game world; Immersion which measures the experience of being surrounded by the game as a result from the interest in and appeal of the sensory and imaginative qualities of the game; Positive Affect which measures players' fun and enjoyment of the game; and Negative Affect which measures the degree to which players are feeling bored and distracted (Herrewijn & Poels, 2013).

Methodology

335 respondents from a tertiary educational institution in Singapore were recruited for this study. The subjects were required to play the sports car racing game, F1 2014 on the Sony Playstation 3. This was followed by the completion of an online survey instrument on the experience of the gameplay. Adapting from the Game Experience Questionnaire utilised in past literature (e.g., Chen et al., 2012; Herrewijn & Poels, 2013), 24 items corresponding to six factors of Challenge, Competence, Flow, Immersion, Enjoyment and Negative Affect were developed. A two-phase data analysis was conducted to develop a reliable and valid scale of digital game experience. In phase one, exploratory factor analysis (EFA) were utilized to purify the proposed scale using the first data set (n = 169). In phase two, a confirmatory factor analysis (CFA) using the second data set (n = 166) was performed to confirm overall goodness-of-fit, reliability, and validity of the measures which were retained from the phase one.

Results

In phase one for data purifications, Cronbach's alphas of the six factors ranged from .76 to .94. However, three items showed poor item-to-total correlations lower than the accepted level of .50, thus were removed from the item pool (Nunnally & Bernstein, 1994). The retained 21 items retained were carried out to conduct EFA. The resulting pattern matrix, accounting for 74.51% of the total variance, showed all 21 items properly loaded on their proposed factors on the basis of .40 factor loading (Hair et al., 1998). In phase two for testing the measurement model, the overall model fit tests showed the adequacy of the model to the data: $\chi(174) = 483.73$, $\chi^2/df = 2.78$, RMSEA = .11, IFI = .91, and CFI = .91. The composite reliability of the six factors ranged from .62 to .93, meeting the .60 cut-off (Bagozzi & Yi, 1988). In addition, all AVE scores ranged from .49 to .81; the AVE value for negative effect (.49) failed to exceed the .50 (Fornell & Larcker, 1981). In terms of validity, out of 21 items, six items' factor loadings were less than .707, indicating lack of convergent validity. Discriminant validity was achieved as the squared correlations among the factors were all smaller than AVE scores for the factors (Fornell & Larcker, 1981).

Discussion and conclusion

Sport video games have been considered as another important advertising medium among companies (Brightman, 2011). The study of in-game advertisements in sports video games has examined brand placement and gamer characteristic factors affecting sponsor recall rate extensively. Using this reliable and valid scale, it will be possible to examine differences in gamer experience across sports video games. More importantly, it will be possible to examine how sponsorship effectiveness varies with gamer experience in a following research.

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