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Research note

Mortality threats and technology effects on tourism

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Introduction

According to the Worldometer statistics, in April 2020 the number of Covid-19-related deaths has surpassed 190,000, creating a general fear of death in people (Long, 2020). Not surprisingly, this has had a tremendous effect on tourism. It is estimated that it will take to tourism almost one year to recover from these losses (Faus, 2020). While it is impossible for tourists to visit museums, parks, or other touristic destinations, because of the Covid-19 lockdown policies, we suggest that there is still a light of hope: virtual tours.

Previous literature on tourism shows that the use of web-based virtual tours improves consumer perceptions of the destination before the actual (physical) experience (Cho, Wang, & Fesenmaier, 2002). Tussyadiah, Wang, Jung, & tom Dieck (2018) investigated the use of virtual reality in tourism (e.g., MET, MoMA, Uffizi) and found that it has a positive effect on the intention to physically visit the place. The present research aims to show a first evidence of what is the effect of virtual tours (interactive vs. non interactive) on willingness to donate to the museum, willingness to pay for virtual tours when, as in these times, consumers not only cannot visit a place, but they are also afraid to go out.

Mortality threat remains the biggest fear humans face (Becker, 1973). Research on Terror Management Theory (Solomon, Greenberg, & Pyszczynski, 1991) suggests that mortality threat affects behavior in several ways: by lowering life satisfaction, well-being, or meaning in life (Burke, Martens, & Faucher, 2010). However, being exposed to something that is important to one’s self-esteem can provide relief to mortality threats (Pyszczynski, Greenberg, & Solomon, 1999). Moreover, people have more positive attitudes towards brands or products that provide them relief from mortality threats (e.g., Sarial-Abi, Vohs, Hamilton, & Ulqinaku, 2017). We extend these findings in the tourism context, because mortality threats can prevent people from traveling (Fennell, 2017). Moreover, providing solutions to tourism during a struggling, uncertain, and threatening time is crucial and critical (Ritchie & Jiang, 2019).

Adding to previous research on these topics, we propose virtual tours with a greater element of innovation (interactivity) as a way to address the threatened tourists. If technology innovation (as the bases of interactive virtual tours) adoption is important to one’s self-esteem, then, given the importance of the latter one to mitigate mortality threats, interactive virtual tours should result in more positive attitudes towards the museum offering that. Fig. 1 shows our conceptual model.

Methodology

To test our model, we conducted an online experiment with 296 US participants (51.01% female; M age = 33.02) drawn from Prolific Academic, in exchange for monetary reward. We randomly assigned our respondents to three conditions i) non interactive virtual tour...
Fig. 1. Conceptual model.

155 × 120°, focusing on the center, similar to a video filmed with a common camera (control A; n = 101), ii) non interactive virtual tour with a 360-degree view, allowing for a broader vision scope (control B; n = 100), and iii) interactive tour with a 360-degree view (similar to Virtual Reality) (treatment; n = 95), see Fig. 2. As stimuli, we used Metropolitan Museum of Art (MET) 360° project on the Temple of Dendur (available on their website at https://www.metmuseum.org/art/online-features/met-360-project). In the treatment condition, participants could use the mouse to actively scroll in all directions deciding where they want to focus on.

Procedure

First, we asked participants to write how they felt about the life-threatening situation related to the spread of Covid-19. To boost the manipulation, they were asked to write a short paragraph on how they were living this situation. Following this, we used 2 items: “I’m feeling my life is threatened” and “I’m thinking about death” to measure mortality threat (our first moderator). A principal component analysis reveals that the scale is unidimensional, and it shows a high level of reliability (α = 0.72). Afterwards, participants were reminded that due to the social distance policies, which prevents tourists from visiting museums, some of them were offering virtual tours. Hence, they were randomly assigned to one of the virtual tours (interactive, control A, control B).

Following the virtual tour (2.5 min), we measured attitudes using 3 dependent variables: intention to visit the MET (α = 0.91; Tussyadiah et al., 2018), willingness to pay for the complete MET virtual tour (“How much are you willing to pay for a complete virtual tour of the museum” from $0 to $25 – the actual cost of a ticket to visit MET), and willingness to donate to MET (“How much are you willing to donate to support MET” from $0 to $10).

We collected a single-item measure of the importance of technology for self-esteem (our second moderator) on a scale from 1 (Not at all important) to 5 (Extremely important), using a single item “How important is adoption of technological innovation for your self-esteem”. In addition, we captured customers interest in visiting museums adapting a scale from Gursoy and Gavcar (2003; α = 0.85). Last, participants indicated their age and gender and which device they used to watch the video.3

Results

Before testing our model, we checked whether our moderators differed across conditions. As expected, the results of the ANOVA suggest that the mean values of both mortality threat (p = .243) and importance of technological innovation for self-esteem (p = .741) are not statistically different across conditions.

Willingness to pay

The results of the ANOVA suggest a marginal 3-way interaction between mortality threat, importance of technological adoption to self-esteem, and type of virtual tour on willingness to pay (F(2,284) = 2.60, p = .076). Given the heavily right-skewed distribution of our variable (p < .001), we used an ordinal scale on three levels: 1 = $0, 2 = $1 to $5 (about the mean value), and 3 = more than $5. The results of the ordinal Probit suggest that consumers as mortality threat and importance of technological adoption to self-esteem increase, they are more willing to pay for an interactive virtual tour (b = 0.18; p = .045) and a 360-degree non interactive virtual tour (control B; b = 0.16; p = .041) versus a static non-interactive virtual tour (control A).

Willingness to donate

The results of the ANOVA suggest a 3-way interaction between mortality threat, importance of technological adoption to self-esteem, and type of virtual tour on willingness to donate (F(2,284) = 3.03, p = .049). Again, willingness to donate proved to have a right-skewed distribution (p < .001). Therefore, we used an ordinal scale on three levels: 0 = $0, 1 = $1 to $3 item (about the mean value), and 3 = more than $3. Results show that consumers that as mortality threat and importance of technological adoption to self-

3 We also collected measures of experience and enjoyment using the scales by Tussyadiah et al. (2018). These variables do not have any significant role in our model. Results can be shared upon request.
esteem increase, they are more willing donate to the museum in our treatment group ($b = 0.26; p = .004$) and control B group ($b = 0.23; p = .008$) versus control A.

Intention to visit the museum

We did not find a statistically significant effect ($p = .419$) on intentions to visit the museum once the Covid-19 lockdown policies are relaxed. A possible explanation could be that consumers may be scared to attend touristic places immediately after the end of the emergence.

General discussion

The aim of our study is to study the attitudes of people towards interactive museum visits during the Covid-19 lockdown. Specifically, we investigate the effect of different interactive tours that museums can offer to threatened tourists that cannot physically visit these destinations. Our results provide empirical evidence on the role of mortality threat and importance of technology adoption to self-esteem on the relationship between virtual tours and intentions to pay for the ticket and to donate to the museum.

Empirical contributions

We have used an experimental methodology to test our prediction. Experiments are the most accurate method to assume causal relationships, and this applies to tourism (Viglia & Dolnicar, 2020). Using an experiment, we overcome the limitation of other methods that can at most testify a relationship, but not causality. Moreover, we have adopted a between-subject design, which provides greater confidence of the effects, compared to the other experimental designs (Viglia & Dolnicar, 2020). One limitation of our empirics is the use of attitudinal (vs. behavioral) data, which can be addressed in future research.

Theoretical contributions

This research heeds the call for future research on tourism in risk and uncertainty in times of crisis and disasters, by Ritchie and Jiang (2019). We contribute to research on mortality threats and tourism (Fennell, 2017; Oren, Shani, & Poria, 2019; Ulqinaku &

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4 Results hold when using (i) a negative binomial regression model and (ii) adding age, gender and interest in visiting museums as controls.
and tourism, by showing that interactive tours are preferred when experiencing mortality threats, especially for individuals who consider technological adoption important to their self-esteem. Contributing to previous research on the effects of crises on tourism (Cró & Martins, 2017), we suggest one way to address threatened tourists.

We also build upon the call by Backer and Ritchie (2017) to propose urgent strategies to help businesses when facing critically uncertain and threatening situations like crisis and disasters, especially in the stage of response and recovery (Ritchie & Jiang, 2019). Our results are important to tourism practitioners that are specifically struggling now. Without the need of extra devices (like Google cardboards, Virtual Reality glasses), tourism can address changing needs of threatened tourists. By emphasizing the importance of technological adoption to tourists’ self-esteem, willingness to pay and to donate would increase.

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