# The Impact of Marketing with 360-Degree Videos on Tourist Willingness to Travel During the Covid-19 Pandemic

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**Abstract.** The Covid-19 pandemic has spread fear and panic throughout the population, causing the tourism business to suffer. Foreign and domestic tourist arrivals have decreased due to the Covid-19 pandemic. This research aims to interpret and offer a summary of the impact of 360-degree video marketing (virtual reality) on travel intentions and eWOW intentions during the Covid-19 pandemic using motivation theory and the Technology Acceptance Model (TAM). Using data acquired from 213 respondents via an online survey, Structural Equation Modeling (SEM) was used to investigate the relationship between the proposed constructs. The online survey included six tourist destinations: Safari Park, Bandung City, Jogjakarta City, Bromo, Raja Ampat, and Bali. Through behavioral involvement, the results of this research show that using video 360 has a beneficial influence on visit intentions and electronic word of mouth (eWOM) intentions. Tourists' plans to visit, on the other hand, have no positive impact on eWOM. Furthermore, we discovered that travel concern due to the Covid-19 pandemic moderated the connection between behavioral engagement and tourist visit intentions. It demonstrates visitors' willingness to travel during the COVID-19 pandemic and tourists requesting information about their travel plans that are affected by the COVID-19 pandemic condition. Overall, the adoption of TAM with 360-degree video and its impact on behavioral intentions in the context of virtual tourism is demonstrated in this research.

**Keywords:** 360-degree video · Technology Acceptance · COVID-19 pandemic · Virtual experience

## 1 Introduction

The worldwide COVID-19 pandemic will result in faster changes in people's behavior patterns, particularly in obtaining information on social networks. This condition forces everyone to stay at home, which pushes people to use social networks to access information, one of which is product information linked to the product they wish to buy. The COVID-19 pandemic has substantially impacted the global economy. Because of

unprecedented mobility limitations, the tourism industry has been one of the worst-affected sectors. [44]. [13], the travel industry is one of the most affected by the COVID-19 pandemic.

Before the COVID-19 pandemic, Indonesia's tourism industry was quickly expanding because of the world-famous hashtag "Wonderful Indonesia." However, there has been a significant fall in the number of both domestic and foreign tourists throughout this pandemic. [2], national economic growth had a contractionary impact on the tourism sector, which was felt by several provinces that relied on tourism as a source of revenue, including the Riau Islands Province, Bali Province, and West Java Province. The number of foreign tourists visiting Indonesia in 2021 is estimated to be 1,557,530, a decrease of 61.57% from 2020, while the number of foreign tourist arrivals in 2020 is estimated to be 4,052,923, a decline of 74.83% from 2020. Furthermore, the number of domestic tourist journeys in 2020 was 518,588,962 compared to 722,158,733 in 2019, representing a 28.18% reduction.

Hotels and tourist accommodations are compelled to close temporarily or permanently due to falling occupancy rates or goverment limitations. The cancellation of events, festivals, and conferences has a significant impact on the tourism industry and has a negative influence on the local economy [43].

[50], conveyed to the tourism sector that it had a detrimental influence, which was seen in a considerable decline in international tourist visits, notably cancellation and decrease in reservations. Apart from foreign travel, domestic travel has declined due to people's reluctance to travel because of COVID-19. Furthermore, the decrease in the tourism and travel business impacts MSMEs, disrupting employment. Before the COVID-19 pandemic, tourism was a labor-intensive industry sector capable of employing more than 13 million people. The COVID-19 pandemic also has a multiplier effect on industries that are closely related to tourism.

During the covid-19 pandemic, people are more interested with taking precautions and less worried with the repercussions of infection. Risk is viewed as a motivator that influences the purpose of the next trip, the pursuit of knowledge, the dissemination of information, and the decision to travel. Travelers are looking for information to help them lower the level of risk associated with their trip [41]. Several tourism and travel studies have been done to study the impact of culture on tourist behavior. Uncertainty about environmental conditions can be harmful to individuals since it reduces effectiveness and contributes to anxiety [13]. However, few studies in the tourism literature have examined the role of uncertainty in visitors' travel decisions [42].

The global concerns outlined above in the tourism sector represent a new challenge: whether the tourism business can survive and thrive in the COVID-19 pandemic condition and how to overcome it. What may be done effectively is to provide a challenge for practitioners as well as academics who are needed by the community [43]. Tourism governance groups should give risk reduction information and education to restore people's trust in traveling again [37]. In addition, venues and travel operators can use virtual travel information mediums such as Virtual Reality to lessen visitor fear and worry [17]. The use of information technology to improve tourist motivation to travel; for example, the use of augmented reality and virtual reality technologies as promotional mediums to form intentions to visit tourist destinations [7]. From a travel marketing standpoint,

virtual reality has the ability to create a sensory experience of a tourist destination or site, and it can be utilized in a sales context to supplement or replace traditional promotional resources such as brochures [16].

Using the Technology Acceptance Model (TAM) increases the potential of VR in destination image development and gives information at the pre-experience stage of the customer decision-making process [16]. [44] added a video that employs the Technology Acceptance Model (TAM) with the addition of new variables to model the adoption of virtual reality (VR) technology, which has a positive impact on travel behavior intentions; however, the use of respondents from different age groups have not been discovered. The usage of video marketing for tourist locations in China has a beneficial impact on their image; additional research is expected to include examples from other countries. It is also in line with the findings of research [12], which found that social media videos created by travelers were an effective medium for attracting other tourists. Lastly, this research identifies areas for further research into travelers' social media behavior and its relevance to their daily social media engagement. According to research [12], social media videos created by travelers are an effective medium for attracting other tourists. [59] investigated what caused the dread of traveling during the COVID-19 pandemic in China.

Tour services must communicate with clients to sustain customer loyalty and tourism needs by accelerating the digitalization of the tourism business. Online video marketing has gained much attention during the pandemic, and offline tourism providers may consider engaging users through interactive movies that would persuade people to travel [41]. As a result of the COVID-19 pandemic, there is a need to reconsider the global business model in the tourism sector due to the interrelated risks posed by travel [14]. The goal of this research is to understand and offer an overview of the relationship between behavioral involvement in using video 360 on visits and ewom intention in the midst of the covid-19 pandemic.

## 2 Theoretical Background and Hypotheses Development

### 2.1 Social Media in Traveling

Tourist journeys have changed dramatically since the development of technology and social media. Travelers no longer rely on guidebooks published by travel experts, travel magazines, and paper maps to help them navigate to their destinations; instead, they have access to information from all over the web in the form of TripAdvisor reviews, travelers' Instagram and Facebook photos, travel blogs, and other online resources. Real-time access to information, ideas, and recommendations has transformed how people approach vacation planning and bookings. Now that the travel decision-making process has evolved and customers can no longer make decisions about their trip or where to stay on their own, they ask for advice from friends, co-workers, travel bloggers on Instagram, and photographs of friends on Facebook and other sources [32].

During the present COVID-19 pandemic, travelers are constantly reminded that traveling increases their chances of catching COVID-19. When carrying out tourism operations, the government consistently prioritizes health protocols. According to [58],

marketing using WOM is one of the measures to promote return tourism. WOM marketing is a useful technique for locations undergoing crises to recover their image. This could explain the marketing strategies and methods for the purpose, such as launching a marketing campaign to boost tourist WOM behavior.

According to [51], the destinations that tourists visit are very important to them, as evidenced by the findings of a survey in which almost all respondents prefer digital channels over traditional and most spend more than 3 h online, and the majority of respondents responded that they always post photos or videos from trips on the internet social networking.

## 2.2 TAM and Motivation Theory

According to [44], in motivation theory, intrinsically motivated people are motivated by the benefits derived through interactions with the system. An extrinsically motivated person is inspired by the expectation of a reward outside of the system user interaction itself. Thus, extrinsic motivation influences behavior because of the worth of the advantages of performance, whereas intrinsic motivation is associated with affective fulfillment derived from activities for their own sake. When researching the use of technology in influencing behavior, satisfaction needs to be considered as an important factor.

[35] adding the use of TAM to be the main factor that determines behavioral intentions where a person believes that using a particular system will improve his performance. In addition, [35] also found a positive relationship between tourists' perceived ease of use and the purpose of their trip in the context of 3D tourism. The use of this TAM will influence the decision to travel.

Immersive technologies, such as *virtual reality* (VR), enable people to travel virtually by employing computer-generated images or videos, simulating real-life experiences and providing travel alternatives [46]. In one research [44], the combination of TAM with destination 360 videos resulted in favorable results such as visits and eWOM intentions via behavioral interaction with tourist destinations.

The findings reveal that 360 video can offer beneficial information for concentrated on vacation spot representations thru a single medium to specific customer segments due to the fact tour motivations and media representing locations ought to be aligned for exclusive purchaser segments, which includes younger customers who are more open to new technologies, will lead to a more positive perception of special media for the delivery of promotional content material and tourist destinations.

## 2.3 Virtual Reality in Tourism Marketing

Virtual tourism is classified into two types: broad concepts and narrow concepts. Virtual tourism, in its broad sense, refers to any method of collecting information and understanding about tourist destinations through non-immersive means. Whereas in a narrow sense, virtual tourism, on the other hand, is the act of seeing a genuine scene in a three-dimensional virtual world using various visualization technologies such as augmented reality (AR) and virtual reality (VR) [60].

Virtual reality has advanced at a fast pace in recent years. Virtual reality equipment, content, software, and other related products are swiftly becoming mainstream consumer

goods. According to reports, 4% of American consumers own a virtual reality device, which amounts to more than 9 million people. Simultaneously, it is expected that by 2025, virtual reality will have a global user base of more than 275 million people. Besides games, 360-degree video has witnessed significant development in recent years as one of the essential pieces of virtual reality entertainment. People can have fresh experiences or learn new things in virtual reality without traveling through space or time [26]. Some of the benefits of employing virtual reality, according to Loureiro et al. (2020), include the planning or management of tourist excursions, as a promotional tool, and the addition of knowledge for tourists themselves.

With virtual reality tourism, it is believed that travel decisions would be made in a more personal and unique fashion, which will benefit tourists [8]. The production of high-interactivity content using virtual reality technology in tourism can improve travelers' interest in visiting a tourist destination [26]. Therefore, increasing tourism revenue can help to mitigate the impact of the COVID-19 pandemic.

In today's society, virtual tourism has become an alternative to traveling, which not only influences government policy but is also utilized to market tourism destinations [52]; [60]. Aside from model design and technology research in the virtual tourism development process, the majority of studies have investigated the current situation and the factors influencing the virtual tourism experience using experimental methods [49], questionnaire surveys [3]; [36, 44], virtual ethnography [52], and interview methods [11].

## 2.4   Perceived Usefulness

Results of previous studies by [44]; [34]; and [9], found that the use of VR video could not improve performance and increase the effectiveness of gathering useful information for travel plans. Perceived usefulness or *perceived usefulness* is one of the main factors that lead to the adoption of applications on the *Technology Acceptance Model* (TAM) model.

- H1: *Perceived usefulness* has a significant positive influence on *VR satisfaction.*

## 2.5   Perceived Ease of Use

According to [34] and [9] research, using VR video can provide simplicity, and respondents feel secure and believe that utilizing a particular system will be free of arduous attempts. [21], this ease of use is dependent on whether an application is simple to use, implying that technology will aid in performing a better job in this area, increasing the satisfaction of utilizing video 360. [34], this is prompted because respondents are already familiar with internet use and find it convenient. However, this *variable* has conventionally been evaluated as part of the experience function and *co-creation* value.

- H2: *Perceived ease of use* has a significant positive influence on *VR satisfaction.*

## 2.6   Perceived Enjoyment

[29] suggested that perceived enjoyment creates a psychological incentive to utilize a product/service via a mobile application, which increases satisfaction. According to [44]

and [3,] the more frequently the Perceived enjoyment receives favorable feedback, the higher the satisfaction of tourists. People desire to use these types of VR apps because they enjoy novel experiences, according to [19].

- H3: *Perceived enjoyment* has a significant positive influence on *VR satisfaction.*

## 2.7  Perceived Autonomy

Research conducted by [24], *Perceived autonomy* is also positively related to satisfaction with the experience of watching video360, which will affect satisfaction with VR. *Perceived autonomy* is defined as the extent to which an individual feels that his actions are free of his own will. [25], found that *Perceived autonomy* significantly affects satisfaction with the use of the virtual world.

[39], convey one of the basic psychological needs, namely autonomy which is considered important. Autonomy refers to a sense of will and ownership of one's own actions.

- H4: *Perceived autonomy* has a significant positive influence on *VR satisfaction.*

## 2.8  VR Satisfaction Dan Behavioral Involvement

[6] carried out a study and discovered that satisfaction had a favorable effect on *Behavioral Involvement*. *Perceived usefulness* and *Perceived ease of use* have a positive relationship with the satisfaction with the video360 viewing experience.

Respondent satisfaction with the quality of information gained from video360, satisfaction with system capabilities and speed, satisfaction with the visual interface design, and overall satisfaction with video360 Similarly, [56] discovered that not only do online videos from tourist blogs assist users make better travel decisions by matching their interests, but they also imprint an image on the minds of tourists, which is then utilized to build their satisfaction rating.

[22] believes that behavioral intentions can result in additional information for the tourism industry to visit a destination. The reason for this is because behavioral intentions have an impact on the success of VR tourism with tourism destination marketing [53]. The behavioral intention itself thus becomes information that visitors can accept the technology deployed [57]. Thus, in earlier investigations, their feelings when taking VR tours resulted in behavioral intentions [57].

*Behavioral involvement* as a result of video360 satisfaction plays an important role in the formation of personalized and symbolic memories as well as the creation of new travel experiences, which impact behavioral intents to visit tourism in 360 videos.

Consumer engagement with technology and their interest in new innovative technologies such as VR found in previous research is related to attitude and behavioral engagement towards technology [57].

[25] conducted a case study to explore the virtual experience of tourists using VR headsets in the context of a national park and found that behavioral engagement for VR experiences positively affects tourists' intention to visit a destination.

- H5: video satisfaction has a significant positive influence on Behavioral Involvement
- H6: Behavioral Involvement has a significant positive influence on *visit intention.*

### 2.9   Visit and eWOM Intention

*Behavioral involvement* as a result of video360 satisfaction is important in forming personalized and symbolic memories and creating new travel experiences, which subsequently impact behavioral intents to visit tourism in 360 videos.

Previous research revealed that consumer engagement with technology and interest in new innovative technologies such as VR is related to attitude and behavioral engagement with technology [57].

[25] conducted a case study to investigate visitors' virtual experiences utilizing VR headsets in the context of a national park and discovered that behavioral engagement for VR experiences favorably affects tourists' plans to visit a destination.

A study conducted by [53] promoted video360 to deliver a better experience at tourist destinations in order to boost visit intention and *eWOM intention.* Participation in media programs has a substantial direct effect on the audience's behavioral intention to visit film tourist destinations. [27] discovered a substantial association between tourist behavior engagement with food locations and plans to visit culinary tourism destinations when studying the effect of video clips in influencing the image of a culinary tourism destination environment.

360-degree video as a new marketing strategy [4] can have a prominent influence on the process of obtaining information by enabling potential travelers to obtain destination information in a much more precise and reliable manner than traditional advertising.

- H6: *Behavioral Involvement* has a significant positive influence on *visit intention*
- H7: *Behavioral involvement* has a significant positive influence on EWOM intention
- H8: Visit intention has a significant positive influence on EWOM intention
- H9: *Visit intention* mediates Behavioral Involvement on *EWOM intention.*

### 2.10   Pandemic Travel Fear

[48] shows that their COVID-19 travel experience will have a significant impact on their travel attitudes, perceptions of travel risk, intentions, and future behavior. In this context, the COVID-19 pandemic has averted an enormous worldwide shift that may have resulted in market upheavals and the establishment of alternative models [33]. This change will encourage managers to take the required efforts and implement innovations to support sustainable development [5].

Research conducted by [60], the covid-19 pandemic not only affects the development of the process and the sustainability of the tourism industry, but also affects the attitudes, needs, and behavior of tourists.

People's motivation and travel fears can be reduced due to the covid-19 pandemic [59]. The covid-19 pandemic has heightened people's desire for safety, prompting them to take precautions such as staying home or only visiting places with a low chance of infection [59]. As a result, avoiding illness and danger might be a motivator to travel [31]. [54] confirmed the link between the covid-19 pandemic and tourist visits motivated by self-protection (Fig. 1).
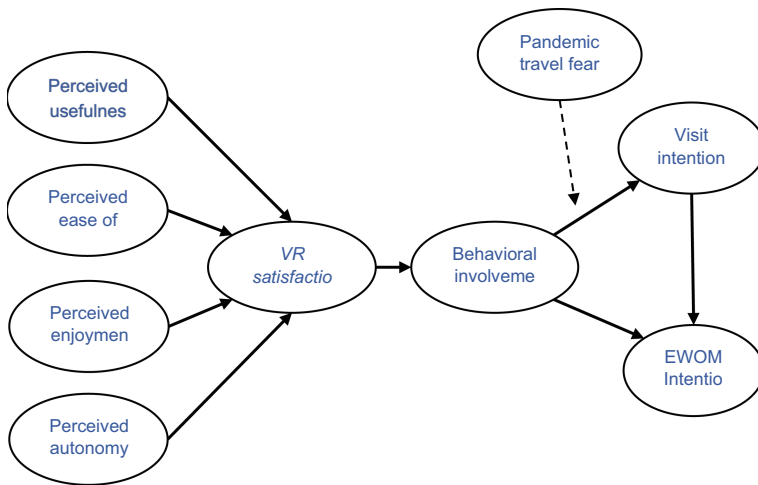
**Fig. 1.** Research Model

- H10: Pandemic travel fear moderates Behavioral Involvement towards Visit Intention.

## 3   Methodology

### 3.1   Data Collection and Procedure

*Perceived usefulness, Perceived enjoyment, Perceived ease of use, and Perceived autonomy* are the 4 (four) *variable* independent in Video 360 satisfaction. Then, VR satisfaction has a positive influence on *Behavioral Involvement*, which in turn has an influence on *Visit intention* and *eWOM intention*, where all of these *variables* are direct research adoptions [44]. According to research [35], the development of interactive, instructive, and clear VR videos can result in positive behavior. This is done in order to make tourists satisfied. Furthermore, 360 video tourism service providers must generate material about tourist sites in order to assist travelers in making travel decisions, according to [55]. According to previous research, the greater the level of satisfaction felt by tourists, the stronger the *Behavioral Involvement.*

This research aims to investigate the positive influence of behavioral involvement on travel intentions and the intention to advocate the use of video 360. Positive *electronic word of mouth* begins with recommendations based on satisfaction with the applications provided, which will then influence travel intentions. Furthermore, according to [23], the level of user satisfaction with VR tourism is very significant, thus there is a need for a credible source of information from VR users, namely *word of mouth.*

Furthermore, previous research did not take into account the respondents' crises, such as the Covid-19 pandemic. People's motivation and travel anxiety can be reduced in the face of the covid-19 pandemic [59]. The covid-19 pandemic has heightened people's desire for safety [45], prompting them to take various precautions to protect themselves, such as avoiding going outside or only visiting places with low infection risk [59]. As a result, the desire to avoid illness and risk can be a driving force behind travel [31]. [54] confirmed the relationship between the covid-19 pandemic and tourist visits motivated by self-protection The *variable Pandemic travel fear* is included in this research as a moderator that influences the connection between *Behavioral Involvement* and *Visit intention.* The use of technological means to connect with the outside world on a regular basis has minimized the unpleasant feelings created by isolation induced by the covid-19 pandemic [38]. To this, it should be emphasized that the covid-19 pandemic's infectious nature has prompted the use of technology to regulate the spread of the disease, with smartphones being transformed into personal trackers [20]. According to previous studies, greater usage of technology leads to increased trust in technology.

In the reference study, this study aims to examine the impact of 360-degree video on attitudes and behavioral intentions towards a tourism destination. In the reference study, the number of 360 videos used is 1 (one), therefore to provide a variety of choices, in this study we use 6 (six) 360 videos for video purposes. The videos were obtained from the Youtube Ministry of Tourism and Creative Economy and other users with destinations in Safari park, Bandung, Bali, Bromo, Jogja, Solo, Semarang, Raja Ampat.

The first step is a pre-test to test the relationship between the proposed constructs. After the validity and reliability are met, proceed with the preliminary test. This research examines the impact of marketing videos on attitudes and intentions to travel during the covid 19 pandemic. An online pre-test survey was conducted on 35 people by purposive sampling. Purposive sampling is a sampling technique with specific considerations based on the conditions specified in the study. The reason for using this purposive sampling technique is because it is suitable for use for quantitative research (Sugiyono, 2016). The questionnaire gives a video link to view the 360 videos. Respondents are asked to view and choose one of the 360 videos. The questionnaire is divided into two parts: a) the first part is to see the effect on the research *variables*, and b) the second part is about the demographics/characteristics of the respondents. A follow-up survey was given to 215 respondents through an online questionnaire using a google form. The criteria for selecting respondents are at least 18 years old, have traveled before the covid-19 pandemic, have seen 360 videos, and have seen videos about tourism.

## 3.2    Measurements

Variable-variable used in this research are Perceived usefulness [44]; [9]; [34], Perceived enjoyment [44], Perceived ease of use [9]; [34], Perceived autonomy [24]; [44], VR satisfaction [44]; [45], Behavioral Involvement [44], Visit intention [24], eWOM intention [56] and Pandemic travel fear [59]. The item's anchor labels are described in Appendix. A frequently used measurement instrument, the Likert scale, asks respondents to rate their level of agreement or disagreement with each of a series of questions about the object. The SEM method has stronger predicting power than path analysis and multiple regression because SEM is able to analyze to the deepest level of the variables or

constructs studied. The SEM approach provides a more thorough explanation of study phenomena. The ability to grasp, parse, and evaluate the deepest contents of a study model can be compared to SEM. The SEM approach should be able to address the shortcomings and deadlocks that plagued the previous generation of multivariate methods, such as path analysis and multiple regression. Confirmatory factor analysis (CFA) was used to examine the elements that influence customer travel intention. Using the Amos 24 software, measure the structural equal model.

## 4 Data Analysis and Results

### 4.1 Respondents Profile

There were a total of 215 people that responded to the survey. There were 213 valid respondents after 2 respondents did not match the criteria. The majority of the respondents (50.7 percent) were between the ages of 26 and 35, were male (55.4%), had an graduated education (77.93%), worked as a civil servant (32,39%), had an income level of IDR 5.000.000,- to IDR 10,000,000.- (41.31%), traveled once a month (61.5%), chose nature tourism as a tourist destination category (46,01%), and watched YouTube for more than 1 h every day (40.38) (Table 1).

### 4.2 Pre-test

Manova test analysis is a test used to determine the difference in mean (mean) across groups on many dependent variables at the same time [47]. 6 (six) video-360 tourist places were used in this research: Safari Park Bogor in Bali, Joglosemar (Jogyakarta, Solo, and Semarang), Raja Ampat, Bromo, and Bandung. Prior to conducting the validity test, the normal distribution test and post hoc test were performed to determine whether there was an influence of tourist destinations on the video on the values of *Perceived usefulness, Perceived enjoyment, Perceived ease of use*, and *Perceived autonomy.*

The correlation coefficient obtained is 0.991 which shows a very high correlation coefficient where the magnitude of the correlation coefficient is between -1 to +1. If the correlation coefficient value > r table or sig. < 0.05, it can be seen that there is a significant correlation. The results of this study indicate that the *scatter-plot* value of sig. is 0.00 or < 0.05 means that the data comes from a sample that is normally distributed multivariate.

Tests of Between-Subjects Effects, it is known that all sig values > 0.05, therefore it may be concluded that there is no difference in values. With all Benferroni test values greater than 0.05, it can be stated that choosing a tourist destination category (tourist destination group) has no significant effect on the value of *Perceived usefulness, Perceived enjoyment, Perceived ease of use, and Perceived autonomy.*

**Table 1.** Respondent demographic profile

|  | Category profile | Frequency | Percentage (%) |
|---|---|---|---|
| **Gender** | Men | 118 | 55.40 |
|  | Women | 95 | 46,6 |
| **Age** | Late teenager (17 - 25) | 36 | 16,9 |
|  | Early adult (26 - 35) | 108 | 50,7 |
|  | Late adult (36 - 45) | 58 | 27,23 |
|  | Early elderly (46 - 55) | 4 | 1,88 |
|  | Late elderly (56 - 65) | 4 | 1,88 |
|  | Elderly (> 65) | 3 | 1,41 |
| **Education** | High School/Vocational High School | 18 | 8,45 |
|  | Bachelor (S1) | 166 | 77,93 |
|  | Magister (S2) | 29 | 13,62 |
| **Occupation** | Student | 18 | 8,45 |
|  | BUMN employee | 49 | 23 |
|  | Private employee | 54 | 25,35 |
|  | Civil servant | 69 | 32,39 |
|  | Entrepreneur | 23 | 10,8 |
| **Income** | No income | 7 | 3,29 |
|  | IDR 3.000.000,- to IDR 5.000.000,- | 44 | 20,66 |
|  | IDR 5.000.000,- to   IDR 10.000.000,- | 88 | 41,31 |
|  | IDR 10.000.000,- to IDR 15.000.000,- | 51 | 23,94 |
|  | > IDR 15.000.000,- | 23 | 10,8 |
| **Travel frequency** | 1 time in a month | 131 | 61,5 |
|  | 2 to 4 times in a month | 72 | 33,8 |
|  | > 4 times in a month | 10 | 4,69 |
| **Travel category** | Educational tour | 67 | 31,46 |
|  | City Tour | 48 | 22,54 |
|  | Nature Tourism | 98 | 46,01 |
| **YouTube watching duration** | 10 minutes - 30 minutes | 53 | 24,88 |
|  | 30 minutes - 1 hour | 74 | 34,74 |
|  | > 1 hour | 86 | 40,38 |

## 4.3   Research Model

Confirmatory factor analysis is carried out to test the unidimensionality of the dimensions forming each latent variable, where the validity of an indicator can be said to be valid if the indicator used can measure certain *variables* with the *Critical Ratio* (CR) value of the *regression weight* showing a value > 2.0 with p < 0.05 (Ghozali, 2012). The results of the calculation of the validity of *Confirmatory Factor Analysis* (CFA) with AMOS
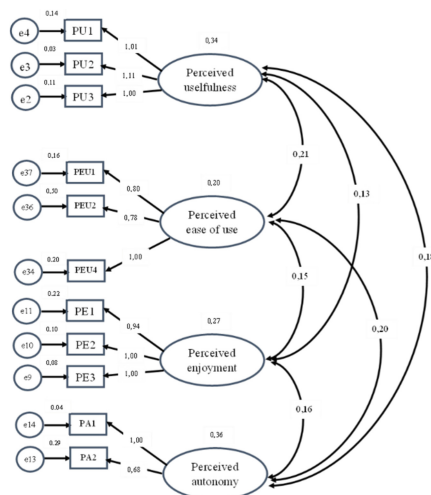
**Fig. 2.** Exogenous construct model

24 software. All indicators have a *Critical Ratio* (CR) value of $> 2$ and a p value of $< 0.05$, so it can be said that all indicator *variables* have met the validity requirements. *Loading Factor* value, all the values of all indicators $> 0.5$ so that the data is said to be *convergently* valid. The results of the reliability test showed that all CR values for all *variables* were $> 0.7$, so that all tested *variables* were reliable. The results of validity and reliability are in the appendix table.

## 4.4 Exogenous Construct

The estimation results of exogenous *Variable measurement* model adjustments. The results of AMOS calculations demonstrate that the Chi-square/df criterion, p values of GFI, TLI, CFI, PNFI, IFI, NFI, AGFI, and RFI are within the recommended limits, while the PGFI and RMSEA index values are within the suggested limits. Based on these multiple suitability indices, it can be determined that the measurement model on exogenous variables has produced a fit model, with a total of 10 goodness of fit criteria indicating good-fit [15]; [18].

## 4.5 Endogenous Construct

The estimation results of endogenous *variable* measurement model modifications. The results of AMOS calculations show that the RMSEA, GFI, Chi-square/df, TLI, CFI, PNFI, IFI, NFI, AGFI, and RFI compatibility tests are within the recommended limits, while the PGFI index value and p value are close to them. Based on these multiple conformity indices, it can be determined that the measurement model on exogenous *variables* has produced a fit model, with a total of 10 goodness of fit criteria indicating good-fit [15]; [18] (Fig. 3).
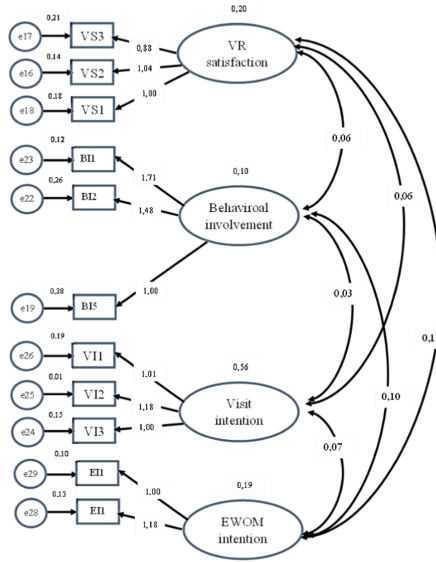
**Fig. 3.** Endogenous construct model

## 4.6   Structural Model

The purpose of this analysis is to assess the adequacy of the data gathered using the specified research model. According to the results of AMOS 24.00 on *Standardized Regression weight*s, all indicators in Full Model 2 are valid because their standard loading factor value is larger than 0.5. According to the AMOS 24.00 output on the *Regression weights* above, the dimensions and indicators of *Full Model* 2 are all significant where the *Critical Ratio* is larger than 1.96 and the P value is less than 0.05. It is possible to conclude that no dimensions or indicators were removed from the subsequent analysis. The viability of Full Model 2 is then assessed (Fig. 4).

Figure 2 *Full Model* 2 reveals that 12 (twelve) variables are included in Good-fit, namely CMIN/DF, RMSEA, TLI, GFI, NFI, IFI, RFI, CFI, PGFI, PNFI, AIC, CAIC, and 1 (one) variable is included in Marginal-fit, namely AGFI, and 1 (one) variable is included in Poor-fit, namely P Value. As a result, model 2 has emerged as a structurally acceptable option [15]; [18].

## 4.7   Moderation

The interaction p value of 0.004 indicates that *Pandemic travel fear* moderates *Behavioral Involvement* on *Visit Intention* considerably. The hypotheses is accepted if the result is a p value less than 0.05 or a *Critical Ratio* more than 1.967 (C.R. = t arithmetic). Based on the findings of the Sobel test using the Sobel *online calculator*, the Sobel test value in the mediation test was 0.709 1.96, and the P value was 0.47 > 0.05, indicating that the influence of *Behavioral Involvement* on EWOM intention through *Visit intention* was not significant. A moderating test was also performed on the *Pandemic*
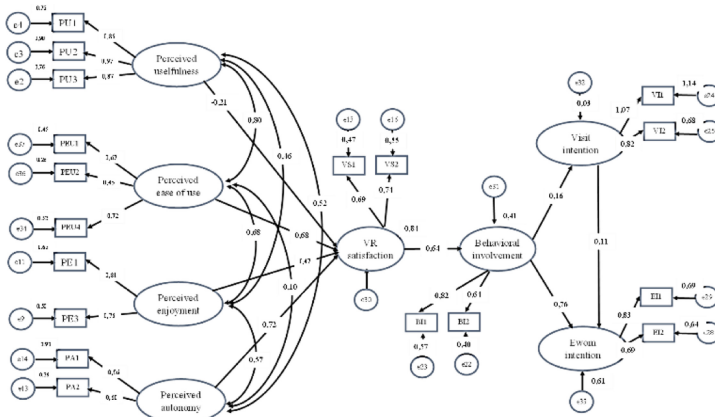
**Fig. 4.** Full model modification

*travel fear variable* to see if it influenced *Behavioral Involvement* significantly on *Visit intention*. According to the moderation test, the p value of the interaction value of 0.004 indicates that *Pandemic travel fear* significantly moderates *Behavioral Involvement* on *Visit intention*.

## 4.8 Hypotheses

The results of hypotheses testing in the structural equal model (SEM) are in accordance with the model processed through the AMOS 24 software with the goodness of fit empirical data indicated, namely CMIN/DF = 1.715; GFI = 0.905; RMSEA = 0.058; TLI = 0.945; NFI = 0.903; AGFI = 0.866; RFI = 0.878; IFI = 0.957; CFI = 0.957; PGFI = 0.640; PNFI = 0.714). With the fit model, the following hypotheses are obtained: *Perceived usefulness* does not have a positive effect on *VR satisfaction* (CR = -1.107; P = 0.268), *Perceived ease of use* has a positive effect on *VR satisfaction* (CR = 2.039; P = 0.041), *Perceived enjoyment* has a positive effect on *VR satisfaction* (CR = 3.158; P = 0.002), *Perceived autonomy* does not have a positive effect on *VR satisfaction* (CR = 0.039; P = 0.969), *VR satisfaction* has a positive effect on *Behavioral involvement* (CR = 6.599; P = ***), *Behavioral involvement* had a positive effect on *Visit intention* (CR = 2.120; P = 0.034), *Behavioral involvement* had a positive effect on *EWOM intention* (CR = 6,964; P = ***), *Visit intention* had no positive effect on *EWOM intention* (CR = 1,677; P = 0.093), Visit intention to mediate *Behavioral involvement* had no positive effect on *EWOM intention* (CR = 0.709; P = 0.47) and *Pandemic travel fear* moderated *Behavioral involvement* had a positive effect on *Visit intention* (CR = 2.904; P = 0.004) (Tables 2, 3, and 4).

**Table 2.** Indicator validity results

| Variable | | Indicator | Estimate |
|---|---|---|---|
| Perceived_usefulnes | → | PU3 | 0,869 |
| Perceived_usefulnes | → | PU2 | 0,971 |
| Perceived_usefulnes | → | PU1 | 0,849 |
| Perceived_ease_of_use | → | PEU4 | 0,718 |
| Perceived_ease_of_use | → | PEU2 | 0,444 |
| Perceived_ease_of_use | → | PEU1 | 0,669 |
| Perceived_enjoyment | → | PE3 | 0,764 |
| Perceived_enjoyment | → | PE1 | 0,809 |
| Perceived_autonomy | → | PA2 | 0,599 |
| Perceived_autonomy | → | PA1 | 0,962 |
| VR_Satisfaction | → | VS1 | 0,686 |
| VR_Satisfaction | → | VS2 | 0,739 |
| Behavioral_involvement | → | BI2 | 0,635 |
| Behavioral_involvement | → | BI1 | 0,821 |
| Visit_intention | → | VI1 | 1,069 |
| Visit_intention | → | VI2 | 0,823 |
| EWOM_Intention | → | EI2 | 0,802 |
| EWOM_Intention | → | EI1 | 0,828 |

**Table 3.** Model hypotheses results

| Variable Estimate | | | C.R. | P |
|---|---|---|---|---|
| Perceived_usefulnes | → VR_Satisfaction | -0,150 | 0,135 | 0,268 |
| Perceived_ease_of_use | → VR_Satisfaction | 0,629 | 0,309 | 0,041 |
| Perceived_enjoyment | → VR_Satisfaction | 0,434 | 0,137 | 0,002 |
| Perceived_autonomy | → VR_Satisfaction | 0,004 | 0,092 | 0,969 |
| VR_Satisfaction | → Behavioral Involvement | 0,789 | 0,120 | *** |
| Behavioral Involvement | → Visit_intention | 0,278 | 0,131 | 0,034 |
| Visit_intention | → EWOM intention | 0,055 | 0,033 | 0,093 |
| Behavioral Involvement | → EWOM_Intention | 0,636 | 0,091 | *** |

**Table 4.** Moderation hypotheses results

| Variable | | | C.R. | P |
|---|---|---|---|---|
| *Visit intention* | <--- | *Pandemic travel fear* | -5,479 | *** |
| *Visit intention* | <--- | *Behavioral Involvement* | -,230 | ,818 |
| *Visit intention* | <--- | Interaction | -2,904 | ,004 |

## 5 Discussion

There is a difference in the influence of the *variable* independent, namely *Perceived usefulness* and *Perceived autonomy*, which do not have a positive affect on video 360 satisfaction, although *Perceived ease of use* and *Perceived enjoyment* do. However, this confirms prior research by [44], in which multiple empirical studies were undertaken to assess the influence of *Perceived usefulness*, which revealed that it is inconsistent. *Perceived usefulness* did not have a significant influence in this research, which is consistent with [59], where *Perceived usefulness* has an insignificant effect on the experience of utilizing online videos since it is more 'cognitive.' However, overall 360 video enjoyment has a beneficial impact on behavioral engagement [6, 44], and [21].

The relationship between the influence that is formed from behavioral involvement on *Visit intention* is discussed in this research, which is in line with research by [44]. Respondents actively seek information about tourist destinations from family, friends, news articles, brochures, or other sources of information. Behavioral involvement plays an important role in forming personalized memories which then affects behavioral intentions to visit tourism in video 360. [28] adds that *Visit intention* can be positively influenced by the experience of using video360. In conclusion, behavioral involvement, such as seeking information related to video360 for tourism, will positively affect the intention of virtual travel and directly come *onsite*. In addition, behavioral involvement also has a positive impact on *EWOM intention*, where this finding is in line with the findings [44], where when respondents actively seek information about video360, respondents will also share video360 information with others.

Another thing that was found in this study was that there was no positive influence between *Visit intention* on *EWOM intention*, this finding was not in line with findings in reference journals, namely [44] which stated that Visit intention had a positive effect on *EWOM intention*. This may be due to respondents not wanting to share travel plans during the covid-19 pandemic on social media, where there is an increase in the transmission rate of covid-19 cases at the time of data collection, namely January 2022. With this travel restriction, even though respondents have a desire to traveling, respondents did not provide travel information through social media. In this study, it is also consistent to show that the *Visit Intention variable* does not have a positive influence on mediating *Behavioral involvement* on *EWOM intention*. [59], during this covid-19 pandemic, the tourism sector was badly damaged as travel was considered a high-risk activity for

tourists. In addition, due to the uncertainty and misleading information about the pandemic on social media, the fear of the pandemic itself and the perception of tourists have led to a significant decline in travel demand. Therefore, respondents are hesitant to make travel recommendations to others.

The most recent data from this research reveal that *Pandemic travel fear* has a favorable influence on moderating *Behavioral Involvement* on *Visit intention.* Despite feeling apprehensive, nervous, and afraid to travel during the COVID-19 pandemic, respondents still desire to travel. According to the findings of the study, the urge to travel can be fulfilled online, such as through the use of video360. According to a study by [60], the covid-19 pandemic not only influences the development of the process and the viability of the tourism business, but it also affects tourists' attitudes, wants, and behavior. For example, [48] found that travelers' experiences during the covid-19 pandemic had a substantial impact on their travel attitudes, perceptions of travel danger, intentions, and future behavior. [5], this change will encourage the adoption of innovations to support sustainable development, namely virtual tourism with online experiences.

Traveling to a destination in the event of a COVID-19 pandemic will be difficult due to the isolation policy's restrictions. As a result, the demand for tourists to reduce risks and reduce costs will increase. In this way, during a crisis, tourists' needs for risk reduction, cost savings, time savings, and convenience make virtual tourism an increasingly attractive alternative [60].

Virtual reality is an effective destination marketing tool that can improve potential tourists' desire to visit. VR tourism can be utilized to improve tourist demand, especially during the COVID-19 pandemic. Tourists might choose to visit the destination they are exploring using VR once it feels safe to travel. Tourist attractions will recover faster if tourism service providers deliver engaging VR travel experiences to potential tourists who must stay at home [1].

**Authors' Contributions.**  In this research, only 360 videos were played via smartphones or computers, thus respondents believed they had no more influence over the video's functioning, notably by touch or mouse click.

According to research findings [1,] immersive 360 video travel material should be developed by giving a high-quality sensory experience. To do this, clarity and interactivity must be improved through the use of high-performance VR devices and processing systems (e.g. hardware). In this circumstance, not only will high-resolution visual images be crucial, but so will high-quality audio headsets and other touches that represent the shifting situation.

In this research there is also a positive influence between behavioral involvement on travel intentions and intentions to recommend the use of 360 video. Strong satisfaction with technology can lead to recommendations for applications that are used to other people so that positive eWOM is created, and ultimately travel. [23] added that, a reliable source of information comes from word of mouth, thus the level of user satisfaction with VR tourism is very important.

However, there was no correlation between the desire to travel and the desire to endorse a vacation plan in this study. This is due to extrinsic circumstances, such as a rise in Covid-19 case

transmission in the month of data collection, January 2022. [59] went on to say that during a pandemic outbreak, the government normally imposes mandatory measures to reduce infections, such as travel restrictions, bans on public activities, school closures, quarantine, and isolation, all of which heightened public fear of a pandemic.

Given the prevalence of social media in the last decade, research has also demonstrated that viewing other people's reactions and experiences online might greatly raise fear [10]. This conclusion is consistent with prior findings, namely that *Visit intention* has no positive effect on mediating *Behavioral Involvement* on *EWOM intention.*

In this research, it was also discovered that there was a positive relationship between the influence of fear in the COVID-19 pandemic on travel intentions, where fear mediates behavioral engagement on travel intentions. [59], discovered that the severity and vulnerability of travel dangers following a pandemic greatly increase travel fears, necessitating protection in post-pandemic tourism. The motivation for virtual travel during the COVID-19 pandemic is primarily driven by elements such as travel motivation, project design, destination attractiveness, travel comfort, travel costs, and quality of experience.

There have been significant changes in the tourism sector since the commencement of the COVID-19 pandemic in early 2020, and the government has had to impose travel restrictions. Driving force Travel inspiration, travel convenience, and travel. Along with the decrease in instances and improvements in all sectors, as well as the relaxation of limitations, there was an increase in incentive to travel, including virtual tourism. According to the research's findings [60], travel motivation, travel convenience, and trip prices are the primary motivators for the establishment of virtual tourist sentiment. Motivation is mostly regarded as a cognitive term, and past research indicates a close association between motivation and attitude [30]. Motivation, for example, influences tourist attitudes and behavior, including engagement and intent to return [30]; [57].

In the virtual tourism experience, motivation remains the initial driving force for the formation of tourist attitudes. However, when in crisis conditions as a result of the COVID-19 pandemic, the difference is that virtual tourism motivation is more focused on tourism demand, preferences and knowledge acquisition. Several researches have stated that the motivation for virtual tourism is curiosity under normal circumstances [49]. [60], found that in crisis situations, tourists' motivation to engage in virtual tourism is more related to the need to release stress and fulfill travel interests that have been constrained by the crisis.

Further researches that focus on Maslow's theory of security needs are still needed to find out whether tourists have a security approach during the COVID-19 pandemic. In general, the perception of security is crucial in tourism and travel, hence some tourist places consider a lack of security to be a disadvantage. This demonstrates the significance of Maslow's hierarchy of needs theory in comprehending tourists. As a tourism incentive, it compels tourists to accept a certain level of risk if they travel during a disease outbreak. Further studies that focus on Maslow's theory of security needs are still needed to find out whether tourists have a security approach during the COVID-19 pandemic [60]. Tourist responses to pandemics can be understood through Maslow's hierarchy of needs, which identifies five levels of needs and motivations in human behavior [40].

In order to strengthen the hypotheses that can be used managerially, it is necessary to conduct in-depth interviews with respondents. This is done as an effort to strengthen hypotheses related to the behavior of 360 video users. The researchers hope that the addition of meal measurement items can provide deep knowledge regarding VR tourism. The results of the research [60], although virtual tourism has been around for a decade, the general public is still relatively new to it.

VR tourist service providers should explore implementing technology to assist in the creation of quality content. The use of VR in several tourism categories such as nature tourism, city tourism, cultural tourism, tourist attractions such as performances, historical building tours, and so on, it is still necessary to conduct model research on specific tourist destinations in the hope of knowing whether there is a specific perspective of VR tourism users., where the measurement in this research

is only in general the use of 360 videos, namely for outdoor tourism purposes. The amount of 360 video quality is an additional variable that has to be researched further.

By advancing the digitization of the tourism industry. Online 360 video marketing has received much attention during the pandemic, and offline tourism operators can now consider reaching users through short video interactive projects. It will attract people to travel. It is recommended that travel and tourism organizations continue to place advertisements in order to be remembered by tourists [41]. Therefore, virtual tourism projects' design and attractiveness of destinations will be critical factors in the positive attitude of virtual tourists. Because virtual tourism projects are new compared to conventional tourism experiences from on-site visits, to get the sensation of using *Virtual reality* is the use of experimental research designs using appropriate VR devices.

Another suggestion is related to the development of *Virtual reality* technology in the present, it is necessary to conduct more in-depth research in the future on the effect of using the *Technology Acceptance Model* (TAM) on the application of the metaverse in tourism.

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