Angela G. Sebby / Kenneth Jordan / Prawannarat Brewer

Travel Decisions: The COVID-19 Paradigm Shift on the Use of Travel Aggregator Websites for Vacation Planning

Abstract

Travel aggregator websites empower vacation planners to efficiently match their travel-specific needs with tourism suppliers. Prominent in communication studies, limited aggregator website research has been conducted in examining vacation planners' usage behavior with travel aggregators. Particularly relevant during the travel and tourism restrictions midst COVID-19, this study extends the Information Needs Model by recognizing the broadened role travel aggregator websites play in the decision-making process of vacation planning. This research explores how leisure planners utilized travel aggregators when travel restrictions and mandates were employed and then rescinded the following year. Travel aggregation websites' functionality was analyzed via vacation planners who use these websites. The online survey addressed: website functionality, demographics, perceived needs of leisure travelers, motivation for travel information sharing, and security concerns during COVID-19. Items addressed were personalization, needs, and satisfaction per demographics. This research provides recommendations to help travel aggregation websites, marketers, and tourism organizations adapt travel aggregation websites' search functionality and customize content post-pandemic to create a more consumer-focused approach.

Keywords: information needs model, travel aggregators, leisure travelers, vacation planning, COVID-19 travel decisions

1. Introduction

As COVID-19 spread globally, many governments declared states of emergency, resulting in stay-at-home orders and restrictions on businesses and consumers. Initially described as a public health crisis, the COVID-19 pandemic would have devastating effects on the business world, leaving no business sector unaffected by the pandemic (World Health Organization, 2020). From manufacturing and supply chains to travel and tourism providers, restrictions resulted in manufacturing disruptions to changes in consumer behaviors and demand (Aday et al., 2020). While no sector was left unscathed by the pandemic, it can be argued that the hospitality and tourism sector was hit especially hard, impacted by more than $2.1 trillion in lost revenues and over 75 million jobs lost (World Travel and Tourism Council, 2020).

According to the United States Travel Association (US Travel Association, 2021), travel spending declined 42% in 2020, international travel diminished 76%, followed by business travel spending falling 70%, and leisure travel receding 27%. The lodging industry in 2020 experienced a 53% decline in revenue per room (Krishnan et al., 2020) and millions of room cancellations as a result of the pandemic. Destinations were also heavily affected by COVID-19. Travel economies in every state and territory experienced declines, with

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Hawaii experiencing the greatest touristic decline in the US, 60% over the year (US Travel Association, 2021). Overall, the pandemic resulted in a cumulative loss of $492 billion for the US travel and tourism sector (March 2020 to December 2020), a daily loss of roughly $1.6 billion for the time period. The continually depressed travel and tourism economy also resulted in a loss of $64 billion in federal, state, and local tax revenue and total travel and tourism GDP loss of up to $ 2.1 trillion in 2020 (Aday et al., 2020).

As a result of the pandemic lockdowns and travel restrictions, Mangono et al. (2021) found a significant increase in consumer demand for information searching, suggesting a hyperawareness and demand for information about COVID-19 socially-oriented searches. This finding aligned with the study of Gozzi et al. (2020) on consumer information searching behaviors during a crisis. While consumers were unable to travel due to restrictions and business closures, the demand for travel and touristic information by consumers was high (Mangono et al., 2021). The purpose of this study was to investigate consumer information searching of travel and tourism information at the beginning and at the end of the COVID-19 pandemic in the United States.

Despite the widespread acceptance and usage of travel aggregation websites among consumers, research has been scant in hospitality and tourism in examining vacation planners' usage behaviors utilizing aggregator websites. Given the role they play in tourists' decision-making processes, this study seeks to understand how consumers use travel aggregation websites, which needs are satisfied, and the changes from the pandemic. The specific objectives of this study are:

- To identify the functionality of travel aggregation websites by users in leisure planning;
- To identify what leisure travelers' needs are from online travel aggregator websites;
- To identify group usage based on demographic characteristics;
- To provide recommendations to travel aggregation website creators, marketers, and destinations regarding content and website information provided.

Literature review

2.1. Travel aggregators and needs

This study investigated the utilization of travel aggregation websites, addressing the functional approach of the online search process and the needs motivations in decision-making. Information search, functionality, and information sharing were examined as decisive components of tourist information search behaviors.

2.1.1. Information search

Information searching is an essential component of the travel decision-making paradigm for tourists and the first step in purchasing a product or service (Murray, 1991). Understanding how tourists acquire travel information can provide necessary guidance for marketers, destinations, and advertisers (Srinivasan, 1990). Factors affecting vacation planners' information search behaviors are personal internal information (memory), socio-demographics, and travel mode.

Murray (1991) believes consumers utilize their internal information source (memory) before engaging in external sources. The extent to which tourists search for travel information is dependent on previous experiences and knowledge levels. Tourists with less personal knowledge of a destination are more likely to spend additional time searching for information comparatively (Fodness et al., 1999). Additionally, tourists with limited knowledge may utilize extra time devoted to comparing destinations and learning more about attractions, culture, and local languages (Won et al., 2011). However, not all information searches lead to purchase or visit intentions but are commonly used as knowledge-seeking opportunities for familiarization or future memory recall (Vogt et al., 1998).

TOURISM
An International Interdisciplinary Journal

Angela G. Sebby / Kenneth Jordan / Prawannarat Brewer
COVID-19 Travel Decisions
Vol. 70/ No. 2/ 2022/ 223 - 242

224

According to Vogt and Fesenmaier (1998), personal demographics influence tourists' pre-trip information searches. Information search needs to increase exponentially with age as consumers expand their internal information sources. Likewise, tourists with lower incomes and education have increased needs for information–the inclusion of innovative needs–while women have a higher level of functional information needs compared to men (Vogt et al., 1998).

Adopting Assael's (1984) Information Acquisition and Processing Model to a Conceptual Model of Information Needs and Source Utilization, Vogt and Fesenmaier's (1998) study expands these frameworks into a Model of Information Needs for tourism. Leisure travelers' needs extend beyond functional needs, encompassing a desire to acquire further knowledge, expanding tourism information search from marketing to communications. While functional needs (knowledge, utility, efficiency, and uncertainty) were considered most important in tourism information searches, innovation, aesthetic, hedonic, and sign needs were also significant. The authors derive that innovation needs (novelty, variety, and creativity) are a stimulus for tourism information searches, while aesthetic needs surmount functional by engaging leisure travelers in imagery and fantasy. Further realizing that leisure travelers' hedonic needs (emotional, sensory, experiential, and phenomenology) create experiences, the authors state this does not alter functional needs during a tourism information search but instead recognizes pleasure found in the process. Finally, the authors reason that sign-needs (social interaction and symbolic expression) allow for the transference of tourism knowledge during the tourism information search, increasing learning opportunities.

A substantial foundation of the tourism industry and a critical consideration of travel planners is travel mode, as diverse modes of travel transportation influence vacation planners' pre-trip information searching. Tourists who engage in less pre-determined trip features will employ increased information searching than tourists who participate in pre-arranged or packaged vacation options (Nishimura et al., 2007). Consequently, security needs such as accidents, disasters, and the potential disappointment in the destination are of concern to tourists who plan their own vacations.

The research of Nishimura et al. (2007) expands the model of Vogt and Fesenmaier (1998) by studying Japanese planners' travel guidebook usage and how information source choices affect travel information searches and the decision-making process. Based on the independent traveler's type of decisions (travel mode, destination, accommodation, meals, and such), the authors derive that there are varying levels of freedom for participants depending on the choice of information sources (travel agent, brochures, TV, WoM, and such).

Over the past two decades, the internet has risen in popularity and usage among consumers. As a result, it has provided businesses with a new platform to engage consumers with the travel industry. In 2003, 14% of US consumers had used the internet to purchase online travel and services (PhoCusWright, 2003), compared to 61% of US travelers in 2018 (Peterson, 2018). The ubiquitous nature of the internet in today's society has spurred tourists to shift from traditional information sources to online search options for their search needs. Previous research has addressed travel guidebooks or social network sites regarding the Model of Information Needs. However, to the best of our knowledge, no study has been conducted on travel aggregator websites extending the Model of Information Needs into the realm of online tourism information searches, particularly during COVID-19.

Online content aggregators are increasingly prominent in information searching as they search across multiple websites, displaying the results in one location. Travel aggregator websites efficiently collate travel-specific content for tourists to review, such as availability and pricing from multiple sources, a time-saving benefit for users. Sites such as Travelocity, Kayak, Priceline, Orbitz, Cheaptickets, Lowestfare, and Expedia are examples of popular travel aggregation websites tourists have adopted for their information search needs, allowing users the freedom to personalize content feed and searches.

TOURISM
An International Interdisciplinary Journal

Angela G. Sebby / Kenneth Jordan / Prawannarat Brewer
COVID-19 Travel Decisions
Vol. 70/ No. 2/ 2022/ 223 - 242

225

2.1.2. Functionality

Users employ travel aggregator websites to acquire an awareness of destinations for enjoyment or vacation planning purposes. Depending on the credibility and information aggregated, one's awareness of the product and intended purchase decisions may be limited (Wong et al., 2011). However, vacation planners' information searches are necessary, considering vacations are viewed as intangible, a high-risk expenditure, and destinations are often unique to the consumer (Zeithaml, 1981; Gitelson et al., 1983; Murray, 1991). Therefore, vacation planners research destinations for vacation options and decision-making, including itinerary planning (culinary, accommodations, activities, and experiences), accurate and objective information, and formulate destination images to cultivate expectations and perceived satisfaction. (Lew, 1991; Wong et al., 2011). Without using tourism aggregator websites, this search would entail the vacation planner to seek initial information on various sites, soon realizing the need to search for alternatives on other vacation sites and creating an extensive and time-consuming pursuit. (Moutinho, 1987).

Vogt and Fesenmaier (1998) state that vacation planning must include two functional components, concise information and the ability to estimate travel expenses to determine the cost/benefit tradeoffs. Travel aggregator websites satisfy this functional need by compiling concise information of multiple destinations necessary for users to perform a comparative analysis. Although the tradeoffs are weighed, this does not necessarily include an immediate purchase decision (Bloch 1986; Bloch et al., 1986). Instead, Vogt and Fesenmaier (1998) indicate that users will assess one's current knowledge and determine if the following functional needs are addressed; knowledge (i.e., destination), purchase decision uncertainty (product or alternatives), perceived value, and efficiency in itineraries, travel, and benefits. If not, Roehl and Fesenmaier (1992) contend that users will continue searching until the information gathered is considered exhausted, meeting the functional needs. Travel aggregator websites satisfy these functional needs efficiently and timely.

2.1.3. Information sharing

The research of Huang et al. (2010) advanced the social interaction of tourism information searching by studying travel knowledge in relation to social network sites and their travel knowledge sharing. As a communication tool, participants can exchange travel-related knowledge and offer social support during information searches. The authors indicate that knowledge sharing is based on social needs and information-seeking motivations, with participation dependent on demographics (gender, age, and education).

Their research augments that knowledge sharing is normally self-centered but charitable; however, through "virtual socialization," it becomes mainly superficial but genuine. It offers one the opportunity to acquire and share knowledge, experiences, and reflections, stay in touch with and motivate others, and express creativity. Likewise, travel aggregator websites allow vacation planners to share and compare travel evaluations while learning from others' experiences to satisfy needs and garner suggestions. This social support utilizes users as co-creators, thereby creating increased value in satisfying one's needs in planning, purchasing, or enjoyment (Prahalad et al., 2004; Vargo et al., 2004).

Users' shared experiences are a significant comprehensive and descriptive source of destination information, generating visual images that intensify one's interest in the destination and the attraction to potentially travel to (Wang et al., 2002; Tussyadiah et al., 2008; Binkhorst et al., 2009). As a means of credibility, this co-creation on travel aggregator websites satisfies many of the vacation planners' functional needs, reducing the uncertainty and risk during pre-travel, travel, and post-travel.

Finally, Wong and Liu's (2011) research broadens the study of Nishimura et al. (2007) by exploring Hong Kong travelers' use of guidebooks for their tourism information needs. As functional needs were found to be predominant, the research utilizes Vogt and Fesenmaier's (1998) other four needs (hedonic, innovation, aesthetic, and sign) in conjunction with learning, benefit-seeking, security, and travel partner needs in pre-trip

TOURISM
An International Interdisciplinary Journal

Angela G. Sebby / Kenneth Jordan / Prawannarat Brewer
COVID-19 Travel Decisions
Vol. 70/ No. 2/ 2022/ 223 - 242

226

use of travel guidebooks. The authors address travel guidebooks as an experience for leisure travelers, resulting in an enhanced level of involvement, especially pertaining to personal needs.

2.2. Travel aggregators and personalization

Vacation planners are active producers of their generated content through the aggregator's functionality, information searches, and online information sharing, thereby satisfying needs motivations such as documentation, enjoyment, and self-expression (Stoeckl et al., 2007). By accumulating extensive travel planning information concurrently, travel aggregator websites deliver a simplified means of disseminating and investigating vast amounts of destination information and resources (Sebby, 2019). Beam and Kosicki (2014) explain that content aggregators allow users to bypass sifting through time exhaustive search engine links. Instead, vacation planners can personalize their vacation needs and wants, employing automated (user profiles) or manual (user keyed information) data input, and thereby significantly reducing the tediousness of continually searching (Beam, 2013; Sebby, 2019).

Personalization occurs both through user-supplied information, as well as algorithms that "generate recommendations based on the places they shop, the stories they read, and even the geolocation, usage, and fitness data provided by their phones" (Sebby, 2019, p. 7). It allows vacation planners to receive opportunities and advertisements from aggregators that are distinctive to their individual and unrecognized needs. Sundar and Marathe (2010) contend that not all users prefer to have content automatically delivered but instead prefer to personalize the aggregator services themselves, thereby creating satisfaction with the travel aggregator website and satisfying their unique needs motivations.

2.3. Travel aggregators and satisfaction

Customer satisfaction is central to the success of any hospitality or tourism product or service, either vis-à-vis or online. This is no less true for travel aggregators for planning, purchasing, or enjoyment. Commensurate with face-to-face consumer relationships, vacation planners will search elsewhere if the online experience is considered unsatisfactory due to lack of personalization or if needs are unsatisfied.

Wu et al. (2017) specify that by controlling information through personalization, consumers satisfy information needs established by their motivations, personal inclinations, and previous knowledge. Additionally, the authors emphasize that satisfaction in the process may encourage the vacation planner to utilize travel aggregators to gather additional information, broadening their information searches and expanding their awareness and expertise of travel planning opportunities. Furthermore, when mentally involved in a website through personalization, variability, and adaptability, users are generally more positive about the experience and products/services provided (Jimenez-Barreto et al., 2018). Therefore, vacation planners are more satisfied with travel aggregators that offer personalization through user input of increased information control compared to aggregators that offer limited user input and provide only essential information.

Value from a company's products is insignificant to the user without detectable benefits from using them (Elsharnouby et al., 2017). If a vacation planner cannot satisfy their needs (planning, purchasing, or enjoyment) through a travel aggregator website, the information gathered has no immediate or increased value to the user, and one feels disappointed. Vargo and Lusch (2008) argue that the user must be an active participant in value creation. As vacation planners utilize travel aggregator websites, users must personalize content to co-create value and enhance the results-driven experience, creating user satisfaction.

3. Methodology

This study employed a quantitative methodology utilizing a structured questionnaire derived from previous extant travel research. The final questionnaire consisted of three sections: (1) questions related to the usage of travel aggregator websites such as website selection, personalization options, frequency, satisfaction, and

TOURISM
An International Interdisciplinary Journal

Angela G. Sebby / Kenneth Jordan / Prawannarat Brewer
COVID-19 Travel Decisions
Vol. 70/ No. 2/ 2022/ 223 - 242

227

time spent on websites, (2) information-search-needs supported by the information search models of Vogt and Fesenmaier (1998) and Wong and Liu (2011), and (3) participants' demographics. A survey validation question was embedded, asking respondents to select a given answer. Any respondent not selecting the correct statement was eliminated from the sample size.

Table 1
Source of the derived construct and items for the final survey.

Construct		Items	References
Knowledge needs (KN)	KN1	To learn about vacation options.	Wong & Liu (2011)
	KN2	To learn about culinary options while on vacation.	Wong & Liu (2011)
	KN3	To learn more about activities while on vacation.	Wong & Liu (2011)
	KN4	To learn more about accommodations I may select.	Wong & Liu (2011)
	KN5	To learn more about the destination.	Wong & Liu (2011)
	KN6	To learn about local attractions.	Wong & Liu (2011)
	KN7	To learn more about the local languages.	Wong & Liu (2011)
Efficiency needs (EN)	EN1	To obtain accurate information.	Wong & Liu (2011)
	EN2	To obtain objective information.	Wong & Liu (2011)
	EN3	To obtain concise information.	Vogt & Fesenmaier (1998)
	EN4	To travel more efficiently.	Wong & Liu (2011)
Utility needs (UN)	UN1	To estimate travel expenses.	Wong & Liu (2011)
	UN2	To plan my own itinerary.	Wong & Liu (2011)
	UN3	To find a good deal.	Vogt & Fesenmaier (1998)
	UN4	To speed up the vacation searching process.	Wong & Liu (2011)
	UN5	To compare properties before booking a vacation.	Wong & Liu (2011)
Security needs (SN)	SN1	To reduce the likelihood of accidents and disasters during travel.	Vogt & Fesenmaier (1998)
	SN2	To reduce the likelihood of being disappointed at the destination.	Vogt & Fesenmaier (1998)
	SN3	To learn more about health and safety guidelines at the destination, especially for COVID-19 protocols.*	New item
Hedonic needs (HD)	HD1	To enjoy spending time online reviewing vacation destinations.	Vogt & Fesenmaier (1998)
	HD2	To excite myself about taking a vacation.	Vogt & Fesenmaier (1998)
	HD3	To experience the local culture.	Vogt & Fesenmaier (1998)
Innovation needs (IN)	IN1	To plan exotic or almost impossible trips.	Nishimura et al. (2007)
	IN2	To enjoy learning about new destinations that few have traveled to.	Vogt & Fesenmaier (1998)
	IN3	To identify unique travel destinations.	Vogt & Fesenmaier (1998)
Aesthetic needs (AN)	AN1	To visualize the destination through pictures.	Vogt & Fesenmaier (1998)
	AN2	To fantasize more about the destination.	Vogt & Fesenmaier (1998)
	AN3	To consider a place for its attractiveness.	Vogt & Fesenmaier (1998)
Sign needs (SG)	SG1	To share information with my travel companion.	Nishimura et al. (2007)
	SG2	To advise others on destination matters.	Wong & Liu (2011)
	SG3	To answer questions from other people about the destination.	Nishimura et al. (2007)
Social support needs (SS)	SS1	To see if I am the only one who thinks of a travel destination in a certain way.	Huang et al. (2010)
	SS2	To compare my own travel evaluations with that of others.	Huang et al. (2010)
	SS3	I feel much better when I read that I am not the only one who feels negatively about a destination.	Huang et al. (2010)
	SS4	I feel much better when I read that I am not the only one who feels positively about a destination.	Huang et al. (2010)
Information dissemination needs (ID)	ID1	To learn from the information others shared.	Huang et al. (2010)
	ID2	To satisfy my needs from information others have shared.	Huang et al. (2010)
	ID3	To receive information about a travel destination.	Huang et al. (2010)
	ID4	To receive suggestions/evaluations based on others travel experiences.	Huang et al. (2010)

Note: This item was later added in Study 2 to explore behavior of travel aggregator website users after the pandemic.

TOURISM
An International Interdisciplinary Journal

Angela G. Sebby / Kenneth Jordan / Prawannarat Brewer
COVID-19 Travel Decisions
Vol. 70/ No. 2/ 2022/ 223 - 242

228

Questionnaires were distributed to leisure tourists utilizing an online data collection platform with data collected from two distinct populations in two time periods. In Study 1, the data collection occurred from February 2020 to March 2020, before the US government declared the COVID-19 outbreak a national emergency on March 13, 2020. Data for Study 2 were collected in early June 2021, after the Centers for Disease Control and Prevention (CDC) provided a new recommendation for fully vaccinated people to resume activities without wearing masks or physical distancing on May 13, 2021.

Data analysis was conducted utilizing SPSS 27.0 to include mean comparison, factor analysis, independent *t*-test, and one-way ANOVA tests. Mean scores and descriptive statistics were defined for each of the ten information search constructs. Exploratory factor analysis and Cronbach's Alpha reliability test were performed to validate the instrument. To compare any significant differences among various demographic profiles and mean differences, an independent t-test, and the one-way ANOVA test were conducted for each factor. Finally, the independent t-test was explored the mean differences between studies.

4. Results and findings

4.1. Pilot test

A pilot test was conducted to examine whether the measurement constructs and items were reliable and valid for the main survey. Amazon Mechanical Turk (Mturk) US workers over the age of 18 were recruited. The survey was distributed to 137 Mturk workers and yielded 100 usable samples. Respondents who failed to answer screening questions, completed the survey too quickly (less than three hundred seconds), or provided the same answers to every question were eliminated from the data analysis. Females represented 41% of the respondents, ranging in age between 25 to 34 years old (41%), 18 to 24 years old (23%), 35 to 44 years old (17%), and 45 to 54 years old (12%) respectively. Over 85% of participants held at least one degree (Associates degree 14%, Bachelor's degree 47%, Master's degree 19%, and professional degree 5%), average household income varied among respondents, $25,000 (11%) to greater than $125,001 (12%). To perform the reliability test, Cronbach's alpha coefficients were utilized and found that the reliability of all constructs was above the cut-off level of 0.70 (Hair et al., 2010), except for three constructs, including Security Needs (a = 0.63), Hedonic Needs (a = 0.62), and Aesthetic Needs (0.62). However, the reliability of these constructs was slightly lower than the cut-off level. Thereby all scale items could be used in the main survey.

4.2. Study 1

A total of 650 respondents completed the online survey; 129 surveys were eliminated as they indicated they did not use travel aggregation websites, failed to answer the survey validation question, selected the same answer for all items, or spent less than three hundred seconds to complete the survey. A Mahalanobis Distance Test was conducted to assess multivariate outliers; 21 outliers were detected in the data (Tabachnick et al., 2013), a total of 500 (76.9%) valid questionnaires were used for further analysis.

More than half of the respondents were male (54.8%), ranging in age between 25 to 34 years old (38%), and 35-44 age group (25.4%), with reported earning between $25,0001 to $45,000 (21.2%) and $45,001 to $65,000 (20%), having a higher education degree (87.4%), and married (52.8%). In regard to ethnicity, respondents identified as Caucasians (68.2%), Asians (14.8%), African American (7.4%), Hispanic or Latino (7.4%), and other (2.2%), respectively. The demographic profiles of the respondents are shown in Table 2.

TOURISM
An International Interdisciplinary Journal

Angela G. Sebby / Kenneth Jordan / Prawannarat Brewer
COVID-19 Travel Decisions
Vol. 70/ No. 2/ 2022/ 223 - 242

229

Table 2
Demographic profiles and website usages and personalization behaviors of respondents.

Characteristics	Study 1 (N=500)		Study 2 (N=540)	
	Frequency	%	Frequency	%
Gender				
Female	226	45.2	226	41.9
Male	274	54.8	314	58.1
Race				
Asian or Asian American	74	14.8	27	5.0
African American	37	7.4	81	15.0
Caucasian	341	68.2	382	70.7
Hispanic or Latino	37	7.4	47	8.7
Other	11	2.2	3	0.6
Age				
18-24	69	13.8	26	4.8
25-34	193	38.6	213	39.4
35-44	127	25.4	154	28.5
45-54	57	11.4	94	17.4
55-64	44	8.8	41	7.6
≥ 65	10	2.0	12	2.2
Education				
High school or GED	63	12.6	42	7.8
Associate degree	71	14.2	29	5.4
Bachelor's degree	262	52.4	320	59.3
Master's degree	76	15.2	136	25.2
Professional degree	28	5.6	13	2.4
Marital status				
Single/divorced/widowed	236	47.2	119	22.0
Married/separated	264	52.8	421	78.0
Household income				
< $25,000	49	9.8	39	7.2
$25,01-$45,000	106	21.2	115	28.5
$45,001-$65,000	100	20.0	135	25.0
$65,001-$85,000	83	16.6	121	22.4
$85,001-$105,000	71	14.2	80	14.8
$105,001-$125,000	34	6.8	23	4.3
≥ $125,001	57	11.4	27	5.0
Website brands				
Travelocity	172	34.4	101	18.7
Kayak	104	20.8	51	9.4
Priceline	109	21.8	40	7.4
Orbitz	34	6.8	20	3.7
CheapTickets	40	8.0	13	2.4
Lowestfare	1	0.2	18	3.3
Expedia	19	3.8	68	12.6
TripAdvisor	7	1.4	88	16.3
Hotels.com	5	1.0	50	9.3
Trivago	2	0.4	50	9.3
Booking	1	0.2	37	6.9
Other (Google, Airbnb)	6	1.2	4	0.7

Characteristics	Study 1 (N=500)		Study 2 (N=540)	
	Frequency	%	Frequency	%
Frequency of website uses				
Once a day	17	3.4	37	6.9
Once a week	51	10.2	110	20.4
Once a month	282	56.4	239	44.3
Several times a day	13	2.6	41	7.6
Several times a week	8	1.6	25	4.6
Several times a month	129	25.8	88	16.3
Time spent on websites				
0-15 mins	87	17.4	37	6.9
16-30 mins	146	29.2	288	53.3
31-90 mins	163	32.6	180	33.3
91-120 mins	58	11.6	28	5.2
≥ 121 mins	46	9.2	7	1.3
Importance of website personalization				
Very important	164	32.8	133	24.6
Important	207	41.4	195	36.1
Neutral	71	14.2	91	16.9
Little important	52	10.4	119	22.0
Not important at all	6	1.2	2	0.4
Numbers of personalization options				
0 options	43	8.6	13	2.4
1-2 options	232	46.4	280	51.9
3-4 options	183	36.6	209	38.7
≥ 4 options	42	8.4	38	7.0
Frequency of personalization setting changed				
Never	61	12.2	23	4.3
Not very often	164	32.8	92	17.0
Sometimes	213	42.6	314	58.1
Frequently	53	10.6	86	15.9
Very frequently	9	1.8	25	4.6
Satisfaction with personalization options				
Very dissatisfied	3	0.6	2	0.4
Dissatisfied	11	2.2	10	1.9
Neutral	92	18.4	91	16.9
Satisfied	326	65.2	320	59.3
Very satisfied	68	13.6	117	21.7
Satisfaction with website contents				
Very dissatisfied	2	0.4	1	0.2
Dissatisfied	13	2.6	18	3.3
Neutral	105	21	83	15.4
Satisfied	295	59	274	50.7
Very satisfied	85	17	164	30.4
Satisfaction with website variety				
Very dissatisfied	1	0.2	2	0.4
Dissatisfied	9	1.8	8	1.5
Neutral	96	19.2	96	17.8
Satisfied	301	60.2	286	53.0
Very satisfied	93	18.6	148	27.4

In addition, this study explored the respondents' travel aggregator website usages and personalization behaviors. The top three visited websites were Travelocity (34.4%), Priceline (21.8%), and Kayak (20.8%), respectively. Respondents also indicated that they use the travel aggregator website once a month (56.4%), and they spent time on the website for approximately 31-90 minutes (32.6%) and 16-30 minutes (29.2%). Over 41.4% indicated that using a travel aggregator website was important to their trip preparation, and 32.8% indicated that it is very important. Over 46.4% of respondents preferred at least one or two options of personalization settings provided on the website, and they tended not to change their personalization settings (42.6% sometimes, and 32.8% not very often). When they were asked how satisfied they were with the travel aggregator website, most of them indicated that they were satisfied with personalization options (65.2%), website content (59%), and variety of travel information received (60.2%).

The means were compared in Table 3, with the four most popular items listed in the Utility Needs construct including "UN3–To find a good deal ($\bar{x}$ = 4.51)", "UN5–To compare properties before booking vacation ($\bar{x}$ = 4.37)," "UN1–To estimate travel expenses ($\bar{x}$ = 4.34)," and "UN4–To speed up the vacation search process ($\bar{x}$ = 4.21)." In comparison, the three least popular items were "SS1 – To see if I am the only one who thinks of a travel destination in a certain way ($\bar{x}$ = 2.91)," "SG3 – To answer questions from other people about the destination ($\bar{x}$ = 3.07)," and "SG2 – To advise others on destination matters ($\bar{x}$ = 3.11)." The absolute values of skewness ranged from –1.108 to 0.737, while the absolute values of kurtosis ranged from –0.970 to 2.145. All scale items had absolute skewness, and kurtosis values were lower than 3.0; hence all scale items were normally distributed (Bollen, 1991).

Table 3
Descriptive statistics comparing the results of Study 1 and Study 2

Items	Study 1 (N = 500)				Study 2 (N = 540)			
	Mean	STDV	Skewness	Kurtosis	Mean	STDV	Skewness	Kurtosis
KN1	4.18	0.616	-0.645	2.145	3.99	0.759	-1.050	2.317
KN2	3.63	1.036	-0.345	-0.744	3.80	1.025	-0.546	-0.437
KN3	3.99	0.822	-0.837	0.964	4.01	0.767	-0.617	0.567
KN4	4.14	0.694	0.737	1.306	4.07	0.729	-0.689	1.039
KN5	4.01	0.852	-0.726	0.268	4.09	0.860	-0.773	0.192
KN6	3.99	0.881	-0.819	0.571	4.04	0.790	-0.568	-0.020
KN7	3.28	1.211	-0.241	-0.922	3.67	1.021	-0.667	-0.026
EN1	4.16	0.731	-0.914	1.623	4.09	0.708	-0.665	0.972
EN2	3.99	0.797	-0.554	-0.115	4.07	0.818	-0.515	-0.306
EN3	4.09	0.742	-0.773	1.158	4.10	0.785	-0.637	0.185
EN4	4.13	0.694	-0.583	0.548	4.09	0.772	-0.759	0.813
UN1	4.34	0.747	-0.824	-0.152	4.24	0.680	-0.437	-0.381
UN2	4.07	0.803	-0.738	0.544	4.09	0.826	-0.655	-0.009
UN3	4.51	0.641	-1.108	0.724	4.26	0.786	-0.988	0.918
UN4	4.21	0.729	0.658	0.163	4.14	0.766	-0.663	0.285
UN5	4.37	0.604	-0.378	-0.666	4.18	0.715	-0.492	-0.200
SN1	3.16	1.137	-0.210	-0.896	3.76	0.859	-0.670	0.430
SN2	3.76	0.984	-0.765	0.184	3.95	0.863	-0.692	0.242
SN3	3.94	0.880	-0.608	-0.109	3.98	0.906	-0.687	-0.038
HD1	3.76	0.934	-0.765	0.381	3.93	0.778	-0.710	1.005
HD2	3.92	0.879	-0.724	0.334	4.08	0.857	-0.643	-0.195
HD3	3.67	1.006	-0.531	-0.341	3.95	0.870	-0.651	0.122
IN1	3.43	0.988	-0.392	-0.173	3.74	0.853	-0.553	0.391
IN2	3.93	0.809	-0.738	0.851	4.00	0.821	-0.468	-0.270
IN3	3.85	0.835	-0.584	0.367	4.04	0.798	-0.557	0.008

TOURISM
An International Interdisciplinary Journal

Angela G. Sebby / Kenneth Jordan / Prawannarat Brewer
COVID-19 Travel Decisions
Vol. 70/ No. 2/ 2022/ 223 - 242

231

Table 3 *(continued)*

AN1	3.95	0.875	-0.722	0.340	4.01	0.779	-0.672	0.504
AN2	3.79	0.952	-0.721	0.127	4.00	0.872	-0.597	-0.238
AN3	3.94	0.847	-0.725	0.499	4.08	0.790	-0.735	0.595
SG1	3.55	1.055	-0.569	-0.356	3.93	0.804	-0.665	0.591
SG2	3.11	1.132	-0.005	0.063	3.93	0.934	-0.705	0.090
SG3	3.07	1.180	-0.916	-0.916	3.81	0.931	-0.719	0.223
SS1	2.91	1.158	-0.003	-0.970	3.64	0.895	-0.580	0.113
SS2	3.16	1.163	-0.131	-0.930	3.87	0.946	-0.588	-0.215
SS3	3.33	1.081	-0.427	-0.523	3.79	0.927	-0.526	-0.194
SS4	3.39	1.064	-0.562	-0.360	3.93	0.842	-0.724	0.772
ID1	3.86	0.819	-1.006	1.539	3.99	0.725	-0.550	0.771
ID2	3.70	0.962	-0.621	-0.068	4.02	0.870	-0.681	0.106
ID3	4.11	0.739	-0.902	1.907	4.10	0.798	-0.747	0.427
ID4	3.93	0.889	-0.944	1.008	4.08	0.744	-0.539	0.245

An exploratory factor analysis was conducted to validate the instrument. Principal component analysis with Promax rotation was applied to examine scale items underlying each construct, items with factor loading less than 0.5 were removed (Hair et al., 2010). Results found two items having a loading lower than 0.5, "KN7 - To learn more about the local languages (a = 0.43)" and "SG1 - To share information with my travel companion (a = 0.41)." Hence, there is a possibility to drop these items from further analysis. Ten factors were generated from the Promax rotated pattern matrix, and they represented 67.14% of the total variance explained. The reliability coefficients of the ten factors ranged from 0.86 to 0.64. This suggests that each construct has a high level of internal consistency. These ten factors are as follows: knowledge needs (factor 1), efficiency needs (factor 2), utility needs (factor 3), security needs (factor 4), hedonic needs (factor 5), innovation needs (factor 6), aesthetic needs (factor 7), sign needs (factor 8), social support needs (factor 9), and information dissemination needs (factor 10). Among ten factors, utility needs achieved the highest mean score with a factor mean of 4.30. The second most highly rated factor was efficiency needs with a factor mean of 4.10, followed by aesthetic needs ($\bar{x}$ = 3.93), information dissemination needs ($\bar{x}$ = 3.90), knowledge needs ($\bar{x}$ = 3.89), hedonic needs ($\bar{x}$ = 3.78), innovation needs ($\bar{x}$ = 3.73), security needs ($\bar{x}$ = 3.62), sign needs ($\bar{x}$ = 3.24), and social support needs ($\bar{x}$ = 3.20). This result is consistent with previous literature that found functional needs to be the most critical among various factors (Wong et al., 2011; Vogt et al., 1998). Table 4 summarizes the results of factor analysis, reliability test of each factor, and mean scores drawing from Study 1.

Table 4
Results of factor analysis and reliability test.

Scale Items	Factor loading	Factor, composite reliability	Eigen value	Cumulative variance %
KN1 - To learn about vacation options.	0.77	Factor 1	9.97	26.95
KN2 - To learn about culinary options while on vacation.	0.74	Knowledge needs		
KN3 - To learn more about activities while on vacation.	0.79	CR = 0.82		
KN4 - To learn more about accommodations I may select.	0.72	Mean = 3.89		
KN5 - To learn more about the destination.	0.61			
KN6 - To learn about local attractions.	0.76			
KN7 - To learn more about the local languages.*	0.43*			
EN1 - To obtain accurate information.	0.68	Factor 2	4.00	37.76
EN2 - To obtain objective information.	0.79	Efficiency needs		
EN3 - To obtain concise information.	0.84	CR = 0.77		
EN4 - To travel more efficiently.	0.56	Mean = 4.10		

TOURISM
An International Interdisciplinary Journal

Angela G. Sebby / Kenneth Jordan / Prawannarat Brewer
COVID-19 Travel Decisions
Vol. 70/ No. 2/ 2022/ 223 - 242

232

Table 4 *(continued)*

UN1 - To estimate travel expenses.	0.81	Factor 3	2.72	45.12
UN2 - To plan my own itinerary.	0.56	Utility needs		
UN3 - To find a good deal.	0.68	CR = 0.78		
UN4 - To speed up the vacation searching process.	0.79	Mean = 4.30		
UN5 - To compare properties before booking a vacation.	0.66			
SN1 - To reduce the likelihood of accidents and disasters during travel.	0.79	Factor 4	1.65	49.58
SN2 - To reduce the likelihood of being disappointed at the destination.	0.80	Security needs		
SN3 - To learn more about health and safety guidelines at the destination, especially for COVID-19 protocols.	0.77	CR = 0.64 Mean = 3.62		
HD1 - To enjoy spending time online reviewing vacation destinations.	0.95	Factor 5	1.59	53.89
HD2 - To excite myself about taking a vacation.	0.73	Hedonic needs		
HD3 - To experience the local culture.	0.67	CR = 0.79 Mean = 3.78		
IN1 - To plan exotic or almost impossible trips.	0.81	Factor 6	1.08	56.80
IN2 - To enjoy learning about new destinations that few have traveled to.	0.63	Innovation needs		
IN3 - To identify unique travel destinations.	0.72	CR = 0.78 Mean = 3.74		
AN1 - To visualize the destination through pictures.	0.76	Factor 7	1.05	59.63
AN2 - To fantasize more about the destination.	0.89	Aesthetic needs		
AN3 – To consider a place for its attractiveness.	0.81	CR = 0.86 Mean = 3.93		
SG1 - To share information with my travel companion.*	0.41*	Factor 8	1.02	62.31
SG2 - To advise others on destination matters.	0.85	Sign needs		
SG3 - To answer questions from other people about the destination.	0.80	CR = 0.85 Mean = 3.24		
SS1 - To see if I am the only one who thinks of a travel destination in a certain way.	0.59	Factor 9	0.99	64.77
SS2 - To compare my own travel evaluations with that of others.	0.74	Social support needs		
SS3 - I feel much better when I read that I am not the only one who feels negatively about a destination.	0.78	CR = 0.85		
SS4 - I feel much better when I read that I am not the only one who feels positively about a destination.	0.82	Mean = 3.20		
ID1 - To learn from the information others shared.	0.79	Factor 10	0.88	67.14
ID2 - To satisfy my needs from information others have shared.	0.69	Information		
ID3 - To receive information about a travel destination.	0.58	dissemination needs		
ID4 - To receive suggestions/evaluations based on others travel experiences.	0.79	CR = 0.81 Mean = 3.90		

Note: Measurement items with * were excluded from reliability and factor analyses because their factor loadings were lower than 0.5, N = 500.

Further analysis was conducted to examine the relationship between travel aggregator website needs and selected demographic profiles, using independent *t*-test, one-way ANOVA test, and the Tukey HSD Multiple Comparison test (Wilkinson, 1999). Significant differences emerged among people based on gender, marital status, age group, and income level. No differences were detected among different educational levels. As shown in Table 5, mean differences between gender are significantly different on factor 9 (t = 2.585, p = 0.01). We found men ($\bar{x}$ = 3.32) are likely to have higher social support needs than women ($\bar{x}$ = 3.10). Mean differences among age groups are significantly different on factor 6 (F = 4.867, p = 0.01), factor 8 (F = 3.582, p = 0.03), and factor 9 (F = 3.326, p = 0.07). Respondents in the 18–24 and 25–34 age groups were more concerned about innovation, sign, and social support needs than those aged above 35–44, 45–54, and 55–64. This result is similar to the study of Wong and Liu (2011) that also found a significant difference in age group among two factors, innovation, and travel partner needs. For household income, respondents with the highest income levels ($125,001 or greater) rated factor 3 higher than the other income categories

TOURISM
An International Interdisciplinary Journal

Angela G. Sebby / Kenneth Jordan / Prawannarat Brewer
COVID-19 Travel Decisions
Vol. 70/ No. 2/ 2022/ 223 - 242

233

($F = 2.203$, $p = 0.04$), with the second-highest income category (\$105,001–125,000) rating factor 10 lower than the other two income categories (\$85,001–105,000 and \$125,001 or greater) ($F = 2.833$, $p = 0.03$, and 0.04 respectively). In regard to marital status, factor 3 was found to be significant ($t = 1.967$, $p = 0.05$), single respondents ($\bar{x} = 4.35$) concerned about utility needs more than married people ($\bar{x} = 4.25$).

Table 5
Results of independent t-test and one-way ANOVA on mean difference of 10 factors by demographic profiles of the respondents (Study 1)

Demo-graphic profiles	Factor 1 Knowledge needs	Factor 2 Efficiency needs	Factor 3: Utility needs	Factor 4: Security needs	Factor 5: Hedonic needs	Factor 6: Innovation needs	Factor 7: Aesthetic needs	Factor 8: Sign needs	Factor 9: Social support needs	Factor 10: Information dissemination needs
Gender	$t = 0.851$	$t = -0.013$	$t = -1.739$	$t = 1.364$	$t = -0.438$	$t = 1.340$	$t = -1.083$	$t = 1.241$	**$t = 2.585*$** F < M (3.10 < 3.32)	$t = -0.924$
Age group	$F = 0.968$	$F = 0.674$	$F = 0.773$	$F = 1.775$	$F = 2.119$	**$F = 4.867*$** 55-64 < 18-24 (3.33 < 3.83) 55-64 < 25-34 (3.33 < 3.89) 35-44 < 25-34 (3.65 < 3.89)	$F = 1.201$	**$F = 3.582*$** 25-64 < 25-34 (3.04 < 3.17) 55-64 < 25-34 (3.04 < 3.45)	**$F = 3.236*$** 35-44 < 25-34 (3.10 < 3.39) 45-54 < 25-34 (2.94 < 3.39) 55-64 < 25-34 (2.94 < 3.39)	$F = 0.357$
Education	$F = 1.072$	$F = 1.051$	$F = 1.981$	$F = 0.581$	$F = 2.050$	$F = 0.761$	$F = 0.381$	$F = 1.592$	$F = 0.267$	$F = 0.161$
Income	$F = 0.328$	$F = 1.694$	**$F = 2.203*$** 25,001-45K < ≥ 125,001 (4.22 < 4.46)	$F = 0.991$	$F = 1.671$	$F = 1.402$	$F = 1.630$	$F = 1.946$	$F = 1.203$	**$F = 2.833*$** 105,001-125K < 85,001-105K (3.68 < 4.03) 105,001-125K < ≥ 125,001 (3.68 < 4.05)
Marital status	$t = -0.230$	$t = 1.793$	**$t = 1.967*$** marr. < sing. **4.25 < 4.35**	$t = 1.129$	$t = 1.031$	$t = 1.488$	$t = 1.502$	$t = -0.882$	$t = -0.454$	$t = 0.612$

Note: Bold figures represent means that are significantly different, $N = 500$.
*$p < 0.05$. **$p < 0.01$. ***$p < 0.001$.

4.3. Study 2

Study 2 had three goals: (1) examine the reliability and validity of the scale items, (2) identify unobserved factors other than those supported by Study 1 and extant literature, and (3) test behavioral changes of travel aggregation website users since the COVID-19 mask and distancing guidelines were removed. Sampling and statistical analysis methods used in Study 1 were repeated in Study 2.

The online survey was distributed to 716 U.S. Mturk workers over 18 years old. Respondents (126 surveys) who failed to answer screening questions, completed the survey too quickly (less than 300 seconds), or provided the same answers to every question were eliminated from the data analysis. Mahalanobis Distance Test was conducted to assess multivariate outliers; 50 outliers were detected in the data (Tabachnick et al., 2013). In total, 540 usable surveys (75.4%) were utilized in the final analysis.

As shown in Table 2, 41.9% were female, ranging in age between 25 to 34 years old (39.4%), 35 to 44 years old (28.5%), 45 to 54 years old (17.4%), and 45 to 54 years old (7.6%) respectively. In regard to ethnicity, respondents identified as Caucasians (70.7%), African Americans (15%), Asians (5%), Hispanic or Latino (8.7%), and other (0.6%), respectively. Over 92.2% of participants held at least one advanced degree (Associates

TOURISM
An International Interdisciplinary Journal

Angela G. Sebby / Kenneth Jordan / Prawannarat Brewer
COVID-19 Travel Decisions
Vol. 70/ No. 2/ 2022/ 223 - 242

234

degree 5.4%, Bachelor's degree 59.3%, Master's degree 25.2%, and professional degree 2.4%). Over 28.5% of respondents stated household incomes between $25,01 to $45,000, $45,001-$65,000 (25%), $65,001-$85,000 (22.4%), and $85,001-$105,000 (14.8%).

The most popular website utilized by respondents was Travelocity (18.7%), consistent with Study 1 results. However, results indicated TripAdvisor (16.3%) and Expedia (12.6%) were the second and third most visited websites by Study 2 respondents, not Kayak or Priceline as reported by Study 1 respondents. Respondents in Study 2 indicated that they used travel aggregator websites once a month (44.3%), spent approximately 16-30 minutes (53.3%) and 31-90 minutes (33.3%) on travel aggregation websites. Over 36.1% indicated that using a travel aggregator website is important to their trip preparation, with 24.6% stating that it is very important. Over 51.9% of respondents preferred at least one or two personalization options provided on the website. They also tended not to change their personalization settings (58.1% sometimes, and 17% not very often). Regarding website personalization, Study 2 respondents indicated they were satisfied with personalization options (59.3%), website content (50.7%), and variety of travel information received (53%).

For the means of scale items, the results of Study 2 were similar to Study 1 (Table 3). The four most popular items were listed in utility needs construct, including "UN3–To find a good deal ($\bar{x}$ = 4.26)", "UN1–To estimate travel expenses ($\bar{x}$ = 4.24)," "UN5–To compare properties before booking vacation ($\bar{x}$ = 4.18)," and "UN4–To speed up the vacation search process ($\bar{x}$ = 4.14)." Among five items in utility needs construct, the item "UN2–To plan my own itinerary ($\bar{x}$ = 4.09)" has the lowest mean. Similar to Study 1, we also found "SS1 – To see if I am the only one who thinks of a travel destination in a certain way ($\bar{x}$ = 2.91)" to be the least popular item, followed by "KN7 – To learn more about local languages ($\bar{x}$ = 3.67)," and "IN1 – To identify unique travel destinations ($\bar{x}$ = 3.74)." The absolute values of skewness ranged from -1.05 to -0.437, while the absolute values of kurtosis ranged from -0.437 to 2.317. All scale items had absolute skewness, and kurtosis values were lower than 3.0; hence all scale items were normally distributed (Bollen, 1991). Additionally, it is noteworthy to mention that means of all scale items in Study 2 were higher than Study 1, except KN5, EN1, UN1, UN2, UN3, UN4, SN1, and ID3.

Independent t-test and ANOVA test indicated significant differences between respondents with different demographic profiles. The t-test revealed mean ratings of the men were significantly higher than women for factor 6 (F = 2.086, p = 0.03, $\bar{x}$ = 3.85 > 4.00). In addition, results indicated significant differences between respondents in relation to marital status. Mean ratings of married respondents were significantly higher than single respondents in all factors, except factor 2 and factor 3. These underlying relationships between each factor are presented in Table 6. By conducting ANOVA testing, significant differences also emerged among age groups, educational and income levels. For age groups, respondents aged ≥ 65 paid more attention to their trip preparation than other age groups, especially on factor 1 (F = 2.237, p = 0.05, $\bar{x}$ = 4.25), factor 2 (F = 2.530, p = 0.03, $\bar{x}$ = 4.42), and factor 3 (F = 2.402, p = 0.05, $\bar{x}$ = 4.48). On contrary to Study 1 that did not detect any significant differences among educational levels, we found mean differences in factor 3 (F = 2.702, p = 0.03), factor 4 (F = 4.241, p = 0.04), factor 8 (F = 3.541, p = 0.07), and factor 8 (F = 4.463, p = 0.03) in Study 2. Respondents with a lower level of education held higher information needs than other education levels. For instance, the mean difference between a secondary and a master's degree for security needs factor was 0.52, which is different at the $p < 0.01$ level. For household income, respondents who were in the highest income category (≥ 125,001, $\bar{x}$ = 4.47) rated the utility needs factor higher than other income categories, resulting in significant differences between the highest and lower categories.

TOURISM
An International Interdisciplinary Journal

Angela G. Sebby / Kenneth Jordan / Prawannarat Brewer
COVID-19 Travel Decisions
Vol. 70/ No. 2/ 2022/ 223 - 242

235

Table 6
Results of independent t-test and one-way ANOVA on mean difference of 10 factors by demographic profiles of the respondents (Study 2)

Demographic profiles	Factor 1: Knowledge needs	Factor 2: Efficiency needs	Factor 3: Utility needs	Factor 4: Security needs	Factor 5: Hedonic needs	Factor 6: Innovation needs	Factor 7: Aesthetic needs	Factor 8: Sign needs	Factor 9: Social support needs	Factor 10: Information dissemination needs
Gender	$t = -0.016$	$t = -1.072$	$t = -1.045$	$t = 1.586$	$t = 1.010$	**$t = 2.086*$ F < M (3.85 < 4.00)**	$t = -0.478$	$t = 1.213$	$t = 1.591$	$t = -0.665$
Age group	**$F = 2.237*$ 45-54 < ≥ 65 (3.87 < 4.25)**	**$F = 2.530*$ 45-54 < ≥ 65 (3.98 < 4.42) 18-24 < ≥ 65 (3.99 < 4.42)**	**$F = 2.402*$ 45-54 <≥ 65 (4.09 < 4.48)**	$F = 1.042$	$F = 0.998$	$F = 1.446$	$F = 1.469$	$F = 0.501$	$F = 1.103$	$F = 1.593$
Education	$F = 1.018$	$F = 0.386$	**$F = 2.702*$ Ba. < Prof. (4.17 < 4.49) M. < Prof. (4.11 < 4.49)**	**$F = 4.241*$ High S. < M. (3.63 < 4.15)**	$F = 1.418$	$F = 1.984$	$F = 1.219$	**$F = 3.541*$ High S. < M. (3.57 < 4.01)**	**$F = 4.463*$ High S. < M. (3.55 < 4.00) BA. < M. (3.77 < 4.00)**	$F = 0.816$
Income	$F = 1.977$	$F = 0.802$	**$F = 1.812*$ ≥ 25K < ≥ 125,001 (4.09 < 4.47) 25,001-45K < ≥ 125,001 (4.15 < 4.47) 45,001-65K < ≥ 125,001 (4.15 < 4.47)**	$F = 0.843$	$F = 1.432$	$F = 0.762$	$F = 1.384$	$F = 0.606$	$F = 0.422$	$F = 1.173$
Marital status	**$t = 3.740*$ sing. < marr. 3.91 < 4.03**	$t = 2.570$	$t = 1.726$	**$t = 10.542*$ sing. < marr. 3.69 < 3.95**	**$t = 17.567*$ sing. < marr. 3.85 < 4.02**	**$t = 12.365*$ sing. < marr. 3.80 < 4.00**	**$t = 7.223*$ sing. < marr. 3.93 < 4.06**	**$t = 9.029*$ sing. < marr. 3.69 < 3.94**	**$t = 5.976*$ sing. < marr. 3.56 < 3.88**	$t = 9.016$

Note: Bold figures represent means that are significantly different, $N = 540$.
$*p < 0.05$. $**p < 0.01$. $***p < 0.001$.

The final analysis examined mean differences between all factors in both studies, in which the data was collected in two different periods within 15 months. According to the result of the independent t-test and means comparison, eight out of ten factors in Study 2 were rated significantly higher than all factors in Study 1 (Table 7). These factors include knowledge, security, hedonic, innovation, aesthetic, sign, social support, and information dissemination needs. For instance, for factor 8 (sign needs), the mean difference between Study 1 and 2 was 1.65 ($t = -12.0702$, which is significant at the $p < 0.001$ level. The two factors that the mean scores in Study 1 are higher than Study 2 are factor 2 (efficiency needs, $\bar{x} = 4.10$) and factor 3 (utility needs, $\bar{x} = 4.30$). Additionally, in factor 4 (security needs) that include a question specifically related to health and safety guidelines for COVID-19 at the destination, significant differences emerged between Study 1 ($\bar{x} = 3.62$) and Study 2 ($\bar{x} = 3.90$), ($t = 6.629$, $p = 0.01$). This indicated that after the health government agency relaxed the mandate for fully vaccinated individuals and COVID-19 cases declined, tourists were likely to be more engaged in the use of travel aggregator websites.

Table 7
Results of independent t-test for mean difference of 10 factors, comparing between Study 1 and Study 2

Comparison	Factor 1: Knowledge needs	Factor 2: Efficiency needs	Factor 3: Utility needs	Factor 4: Security needs	Factor 5: Hedonic needs	Factor 6: Innovation needs	Factor 7: Aesthetic needs	Factor 8: Sign needs	Factor 9: Social support needs	Factor 10: Information dissemination needs
	$t = -3.073^{**}$	$t = 0.265$	$t = 3.692^{***}$	$t = -6.629^{***}$	$t = -4.497^{***}$	$t = -4.435^{*}$	$t = -2.444^{***}$	$t = -12.0702^{***}$	$t = -11.964^{***}$	$t = -0.665$
Differences	S.1 < S.2	S.1 > S.2	S.1 > S.2	S.1 < S.2	S.1 < S.2	S.1 < S.2	S.1 < S.2	S.1 < S.2	S.1 < S.2	S.1 < S.2
Study 1 Factor Mean score	3.89	**4.10**	**4.30**	3.62	3.78	3.74	3.93	3.24	3.20	3.90
Study 2 Factor Mean score	**4.00**	4.09	4.18	**3.90**	**3.99**	**3.99**	**4.03**	**4.89**	**3.81**	**4.04**
Mean differences S1<S2	**0.11**	-0.01	-0.12	**0.28**	**0.21**	**0.25**	**0.10**	**1.65**	**0.61**	**0.47**

Note: Bold figures represent higher mean scores and means that are significantly different in each factor, $N_1 = 500$, $N_2 = 540$.
*$p < 0.05$. **$p < 0.01$. ***$p < 0.001$.

Conclusions and implications

The purpose of the study was to: (1) explore how travel planners acquire vacation planning information utilizing travel aggregation websites, (2) identify their functionality regarding needs and, (3) determine demographic impacts on behavior. Study 1 was conducted at the onset of the COVID-19 pandemic, and Study 2 was conducted once the US governmental guidelines on masking and social distancing were removed for vaccinated individuals.

The findings in Study 1 indicated the functionality of travel aggregation websites varied among participants, with 75% of participants indicating they used their primary travel aggregator website at least once per month, logging between 19-90 minutes. Compared to Study 2, 44.3% of respondents indicated they used travel aggregation websites at least once a month, logging between 19-90 minutes (88.6%). Personalization options, settings, and preferences were found to be significantly important with both study groups. Results reveal that Study 2 participants spent more time utilizing travel aggregation websites than Study 1 participants. This finding would be consistent with the easing of travel restrictions and participants planning to travel.

Results also revealed that female participants derive more utility in terms of their functional and benefit-seeking needs by using travel aggregation websites for both studies' participants. Female participants utilized aggregation websites to gain accurate destination information, search more efficiently, and plan personal itineraries. Male participants' information searching focused on more generalized vacation searching than women, consistent with Maser and Weiermair's (1998) investigation of consumers' travel making decisions where women often seek more information when searching travel information. This may be attributed to women as the primary decision-maker in travel planning. Results indicated safety needs were higher among Study 2 participants compared to Study 1. Study 2 participants utilized travel aggregation websites to search safety and sanitation protocols utilized by destinations and service providers. These results would be expected given the effects of the COVID-19 pandemic on consumers' desire to stay safe while traveling.

Results of both studies indicated that younger study participants (18 to 24) were more likely to use aggregation websites to fulfill their *hedonic*, *sign*, and *social support needs*. For younger study participants, aggregation websites serve as a mechanism to vicariously consume travel destinations in their search for exotic and impossible vacation planning, thereby evoking a feeling of enjoyment (Cho et al., 2008). Vicarious consumption may act as a stimulus to future travel (Wu et al., 2008). It may also serve as a way to enjoy a particular destination absent the ability to travel, thereby acting as a form of escapism or vicarious consumption.

TOURISM
An International Interdisciplinary Journal

Angela G. Sebby / Kenneth Jordan / Prawannarat Brewer
COVID-19 Travel Decisions
Vol. 70/ No. 2/ 2022/ 223 - 242

237

Participants with higher income levels in both studies ($85,000 or greater) utilized travel aggregation to fulfill their *functional*, *learning*, *benefit-seeking*, and *social support needs* in their information gathering and destination planning. Functional search needs allow participants to acquire destination information such as pricing and destination-specific information utilized in the planning and decision-making process. Participants with higher income levels also utilized travel aggregation websites to compare properties before the final booking decision and to fulfill their *social support needs* in reviewing travel destinations. According to Jalilvand and Samiei (2012), online WOM communications often significantly impact destination choice and selection. Aggregation websites allow consumers to review travel destinations and the comments and communications of other consumers based on their previous consumption and experiences, providing future consumers with experiential feedback that can be utilized in their evaluation and final decision-making paradigm.

While younger and higher-income participants both noted utilizing travel aggregation websites to fulfill their *social support needs*, study results indicated younger participants (18 to 34) were more likely to utilize aggregation websites as a mechanism for *social support* than older participants. Younger participants indicated they used aggregation websites to observe how other people perceived a particular location, see reviews, and answer questions about the destination. These results are consistent with the extant literature noting that older generations prefer face-to-face, telephonic conversations, or peer messaging via email or text messages in evaluating information (Iyer et al., 2017).

The marital status of study participants in both groups was utilized to identify differences among single and married participants using travel aggregation websites. Data revealed that both groups could fulfill various needs using travel aggregation websites; however, two salient themes emerged from the data. Married participants utilized travel aggregation websites as a mechanism to plan actual vacations, while single participants utilized travel aggregation websites in a generalized sense. Results indicated that married participants used travel aggregation websites to plan trip itineraries, review destination-specific amenities, share information, and answer questions about the destination. Conversely, single participants were more likely to use aggregation websites to fulfill *hedonic*, *innovation*, and *aesthetic needs*. Single study participant data revealed single participants used travel aggregation websites to fantasize, excite themselves, and plan exotic trips, viewing travel aggregation websites as entertainment and enjoyment while reviewing online travel destinations.

5.1. Theoretical and practical implications

This study's findings hold both theoretical and practical implications for vacation marketers. The results indicate younger participants used travel aggregation websites to fulfill their *hedonic*, *innovation*, and *social support needs*. Older participants and female participants used travel aggregation websites functionally to plan actual trips, learn about destination amenities, and compare pricing before making a purchase decision. The findings also revealed male participants used travel aggregation websites for more generalized searches, while female participants were more deliberate in planning trips and acquiring information.

This research has several important managerial implications for vacation marketers. Practitioners should consider highlighting safety and sanitation procedures utilized by service and travel providers. Participants indicated the importance of safety in their decision-making process. Practitioners may consider adding different website functionality based on a*ctual vacation planning*, *vacation ideas*, or *future exotic/unique travel*. Incorporating such segments may increase user satisfaction by shortening the searching process and increasing exposure to content most relevant to their search goals. Practitioners could also include follow-up communications/recommendations via email communications or text messaging on the searches mentioned above. This customization level could provide a more targeted approach for consumers based on their end goals and travel search needs, helping practitioners tailor information to drive conversions.

TOURISM
An International Interdisciplinary Journal

Mugiarti Mugiarti / Wiwiek Rabiatul Adawiyah / Rahab Rahab
Green Hotel Visit Intention Among Young Tourist, Indonesia
Vol. 70/ No. 2/ 2022/ 243 - 257

238

5.2. Limitations and future research

While all studies inherently have limitations, this study is no exception. One limitation of the study is the homogeneity of the study population. While every effort was made to recruit diverse study participants, most study participants were homogenous concerning ethnicity and education. As a result, future research may want to investigate travel aggregation websites' usage in vacation planning among a more ethnically and educationally diverse population. The incorporation of a more diverse population may reveal additional findings beyond the current study. Next, the study's target participant group was identified as those who use online travel aggregator websites for travel planning; however, there is no verifiable way to confirm their behavior. Future research may want to examine the usage of travel aggregation websites with only consumers who are actively engaged in the planning process. Lastly, future research may also want to investigate travel aggregation websites' usage to examine consumers' pre-trip expectations to determine if the present study's material on the travel aggregations detracted from the consumer's expectations.

Conclusion

According to the World Trade Organization (2021), recovery after the COVID-19 pandemic will be uneven. Lagging vaccination timetables, vaccine hesitancy, unfilled job openings, and erratic supply chains will continue to place downward pressure on global recovery efforts. Post-recovery will depend on consumer confidence and institutional efficiency of operating in a post-pandemic world and for the hospitality and tourism industry to develop a crisis-readiness mechanism to deal with the current and future pandemics (Skare et al., 2021). Organizational flexibility will be critical in developing strategies to meet the needs of consumers. This study investigated consumer usage behaviors of travel aggregation websites. Findings indicated consumers utilize travel aggregation websites to satisfy their functional need for information, along with learning needs and benefit needs. With travel aggregators' decreased advertising budgets and increased travel planners' usage of such sites, this research guides travel marketers and destinations with heightened content and relevancy of travel website information provided to vacation planners. Policymakers and practitioners in the tourism industry will need to work together to develop cooperation strategies designed to promote tourism, compared to competition strategies during a post-COVID-19 world. Understanding consumer needs and desires identified by this study will be critical in the post-pandemic recovery efforts of touristic enterprises and local economic recovery efforts. Our research adds to the overall body of knowledge in the field of consumer tourism and travel behaviors and adds to crisis management within the field of hospitality and tourism economies.

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TOURISM
An International Interdisciplinary Journal

Angela G. Sebby / Kenneth Jordan / Prawannarat Brewer
COVID-19 Travel Decisions
Vol. 70/ No. 2/ 2022/ 223 - 242

239

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TOURISM
An International Interdisciplinary Journal

Angela G. Sebby / Kenneth Jordan / Prawannarat Brewer
COVID-19 Travel Decisions
Vol. 70/ No. 2/ 2022/ 223 - 242

240

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TOURISM
An International Interdisciplinary Journal

Angela G. Sebby / Kenneth Jordan / Prawannarat Brewer
COVID-19 Travel Decisions
Vol. 70/ No. 2/ 2022/ 223 - 242

241

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TOURISM
An International Interdisciplinary Journal

Angela G. Sebby / Kenneth Jordan / Prawannarat Brewer
COVID-19 Travel Decisions
Vol. 70/ No. 2/ 2022/ 223 - 242

242