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COVID-19 two years on: A review of COVID-19-related empirical research in major tourism and hospitality journals

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COVID-19 two years on: A review of COVID-related empirical research in major tourism and hospitality journals

Abstract

Purpose - This study aims to provide a timely review of the COVID-related empirical research published in 19 quartile one (Q1) and quartile two (Q2) tourism and hospitality journals in social science citation index (SSCI).

Design/methodology/approach – A total of 407 COVID-related empirical papers were collected from the 19 SSCI Q1 and Q2 tourism and hospitality journals via Scopus database. Thematic content analysis was supplemented with Leximancer software to identify the research themes/subthemes, research methods, and countries/regions of research.

Findings - The study found studies of COVID's *impact on consumer behaviour* predominate in number, followed by studies on *response actions and recovery strategies*, *impact on industry or sectors*, and *impact on workers and employees*. Based on the research themes identified, a knowledge mapping framework was produced. Over seventy percent of the studies employed quantitative methods with quantitative survey as the dominant method of data collection. The United States and China were found to be the most studied countries.

Research implications - The study reviewed empirical research papers until January 2022 and covered most of the COVID-related empirical works in the field. An overview of the current state of COVID-related empirical research was provided with some critical discussions and suggestions for future research topics.

Originality/value – The findings give researchers a clear index for the current state-of-the-art of COVID research in hospitality and tourism. The paper provides practical implications for industry practitioners to retrieve relevant knowledge from the recent COVID-related literature in TH in coping with practical challenges brought by the COVID-19 pandemic.

Keywords: COVID-19; tourism; hospitality; empirical research; review

1. Introduction

Tourism and hospitality industries have been severely damaged by the COVID-19 pandemic. After the start of the pandemic, tourism and hospitality researchers quickly responded to COVID-19 (Gössling *et al.*, 2021) and the field has witnessed speedy publications in some journals. However, early COVID-related publications in the field are mostly viewpoints and commentaries (Utkarsh and Sigala, 2021), and are thus limited in knowledge creation. Little evidence-based research can be witnessed in the early commentary/viewpoint publications. During the COVID-19 global crisis, agile academic research is required to produce empirically verified knowledge to help the industry cope with the challenges. Therefore, it is important to survey the COVID-related empirical studies in tourism and hospitality.

In the past two years, a substantial number of COVID-related empirical studies were conducted and published. In tourism and hospitality, a small number of review studies (Utkarsh and Sigala, 2021; Yang *et al.*, 2021; Zopiatis *et al.*, 2021) on COVID-related research have been published, demonstrating the importance of timely reviews in this research terrain. However, these reviews are apparently limited in their scope covering publications roughly for one year (2020- January 2021) and their indiscriminating inclusion of non-empirical articles. It is estimated that most empirical studies would result in publications in 2021; therefore, a review on empirical COVID studies will effectively address the limitations of the previous reviews and advance the understanding of knowledge creation by tourism and hospitality researchers in response to the pandemic. Given the volume of publications and number of journals in the field, two years would provide a significant time-frame for a substantial review regarding COVID-related tourism and hospitality research.

This study thus aims to offer a timely review on COVID-related empirical research in major tourism and hospitality journals. The quartile 1 (Q1) and quartile 2 (Q2) journals in social science citation index (SSCI) provide good quality control in their peer review system and the empirical studies published in these journals would generally represent the quality work in the field. Therefore, it is not uncommon to see tourism researchers use the SSCI listed journals as quality indicators in review studies (Wong *et al.*, 2021). Accordingly, we set up our review scope to be the 19 Q1 and Q2 journals in TH based on the 2021 SSCI journal impact factor (JIF) data.

This review study makes the following contributions. First, it provides an overview of the empirical research progress of COVID-related studies in tourism and hospitality, which has not been offered by any similar studies (Utkarsh and Sigala, 2021; Yang *et al.*, 2021; Zopiatis *et al.*, 2021), but is urgently needed by both academia and industry. Through this paper, tourism and hospitality researchers can develop a better understanding of the COVID-related research development in the field. Second, this study provides an integrative knowledge framework for tourism and hospitality researchers to guide their future COVID-related research. COVID is likely to be a significant context for hospitality and tourism research in the coming years. This review will thus lay a foundation to track the evolvement of COVID-related research in tourism and hospitality. Third, this review is also intended to bridge academic research and industry practice in the COVID context. Industry practitioners will find this paper a useful guide to understand the knowledge accumulated through empirical studies in the field.

2. Literature background

2.1 Review studies in the field of tourism and hospitality

Review studies are well-established academic research practices integrating and synthesizing research progresses, identifying inconsistencies, and providing a “state-of-the-art” snapshot of accumulated knowledge in a specific scientific discipline (Palmatier *et al.*, 2018). The field of tourism and hospitality research has seen numerous review studies in different stages of its development, and the purposes, scopes, and topic foci of these review studies have been diverse (e.g., Crouch, 1995; Huang, 2011; Sheldon, 1991). Generally, review studies provide timely reflections and integrative assessment of the development of a field and offer fine-grained analyses of the field’s research progress and insights on the field’s future development (Palmatier *et al.*, 2018). In tourism and hospitality, there have been regular reviews on authors’ and institutions’ contributions to the field’s research development (Jogaratham *et al.*, 2005; Sheldon, 1991). For instance, in early 1990s, Sheldon (1991) conducted authorship contribution analysis in tourism research, leading a stream of review research which sees later and contemporary applications (cf. Jogaratham *et al.*, 2005; Wong *et al.*, 2021). Recently, Wong *et al.* (2021) conducted a longitudinal analysis on 14,229 journal articles published in 12 selected SSCI journals in tourism and hospitality from 2000 to 2019 and identified shifts of prolific authors and research collaboration patterns over time.

2.2 COVID-19 and tourism and hospitality research

The COVID-19 pandemic created a new context for tourism and hospitality research (Gretzel *et al.*, 2020; Sigala, 2020; Zenker and Kock, 2020). The pandemic is believed to act as a “switch breaker” for the hospitality industry (Liu *et al.*, 2021). Although previous studies on the impact of global crisis (e.g., SARS, the 2008 global financial crisis) have provided some relevant knowledge to understand the relationship between COVID-19 and tourism (Ritchie and Jiang, 2019), COVID-19 should not be treated simply as yet another ‘crisis’. The COVID-19 pandemic has revealed itself to be much more far-reaching and evolutionary in its impact on the tourism and hospitality industries than any other crisis (Zenker and Kock, 2020). Zenker and Kock (2020) argue that COVID-19 is unique in its scale and demonstrations, and can be regarded as a combination of different types of crisis, including natural disaster, health crisis, socio-political crisis, and economic crisis, thus presenting a much more complex context for tourism research. Tourism and hospitality researchers generally believe that the pandemic would reset tourism research (Gretzel *et al.*, 2020; Sigala, 2021) to a certain degree and “potential corona research paths” have been speculated (Zenker and Kock, 2020, p.2). In this regard, commentary articles are a popular form to express researchers’ views quickly (cf. Brouder, 2020; Higgins-Desbiolles, 2020). For instance, Higgins-Desbiolles (2020) postulated that the COVID-19 pandemic may present a rare and invaluable opportunity for tourism industry practices to be more responsible, equitable and sustainable. In a similar vein, Brouder (2020, p. 484) argued that the pandemic may offer “a once in a generation opportunity” for institutional and industry transformation in tourism.

2.3 Review studies of COVID-related research in tourism and hospitality

Recognising the growing number of COVID-related publications in the field, a small number of review studies have been conducted (Utkarsh and Sigala, 2021; Yang *et al.*, 2021; Zopiatis

et al., 2021). Yang *et al.* (2021) reviewed 249 papers from 76 academic journals in and outside tourism published until January 2021. In the sample, 124 articles were found to be published in five hospitality and tourism journals (*International Journal of Hospitality Management*, *Current Issues in Tourism*, *Tourism Geographies*, *Annals of Tourism Research*, and *Anatolia*). Given that only articles in 5 hospitality and tourism journals are covered, Yang *et al.*'s review did not provide a clear picture of COVID-related research in major journals in the field.

Based upon 177 papers published until January 2021, Utkarsh and Sigala (2021) used co-word analysis and identified 4 major themes. Similarly, Zopiatis *et al.* (2021) searched the Scopus database and identified 362 articles from December 1st 2019 to march 7th 2021. While the above three review studies each display some themes and research patterns using their respective sample, they have significant limitations. First, they cover a relatively short period (approximately one year) of the early research on COVID-19 and tourism and may not be able to capture those empirical studies emerging largely in 2021. Second, they did not differentiate those early viewpoint/commentary articles from later empirical studies. While epistemologically researchers can view knowledge creation from vastly contrasting paradigm perspectives (e.g., positivism vs. interpretivism), from a positivistic point-of-view, commentaries and viewpoint articles may better be regarded as unverified propositions which are subject to further empirical tests. In view of these limitations, the current review study extends the review period to two years and focuses on empirical studies in relation to COVID-19 in major tourism and hospitality journals.

3. Methods

3.1 Data collection

This study collected its data from the Scopus database in January 2022. We used the Web of Science (WoS) Social Science Index Citation (SSCI) and selected 19 quartile 1 and quartile 2 journals in tourism and hospitality (Table 1). These 19 journals created a comprehensive scope for our review. As we focus on empirical research in relation to COVID-19, these journals, as top-quality journals in the field, provide the quality control that guarantees academic and methodological rigor in the empirical papers published in them.

Place Table 1 about here

We logged into the Scopus database and searched for the journals listed in Table 1. With each journal, all published articles (including online-first articles) from 2020 to 2022 were recorded, within which COVID-related articles were screened out with a search term of "COVID-19", or related keyword like "social distancing", "quarantine", "pandemic", "travel bubble", and "crisis". Article title and abstract were quickly examined to determine whether an article was COVID-related and should be included in the first step of the data collection. After collecting all COVID-related articles in the dataset, each article was then examined to determine whether the study was empirical or not. To determine whether a paper is empirical, we followed a relatively broader definition of empirical research than that of Scudder and Hill (1998, p.91), who defined empirical research as "research that makes use of data that is

derived from naturally occurring field-based observations, taken from the industry” in the field of operations management. Scudder and Hill (1998) would exclude laboratory setting studies, mathematical modelling studies, or simulation modelling studies in empirical research. Considering the nature of tourism and hospitality research, we expanded empirical research into experimental design studies, which are becoming increasingly popular in the field (Sun *et al.*, 2020), and mathematical or simulation modelling studies in tourism which also see their popularity with tourism forecasting and economics studies with real-world secondary data (e.g., Curto *et al.*, 2022).

As shown in Table 1, in the examination period (January 2020-January 2022), the 19 selected journals published a total of 5575 articles including in-press online-first articles, 8.41% of which (n = 469) are COVID-related articles, and 7.30% of which (n=407) are COVID-related empirical research articles. We used the 407 empirical articles (including online-first articles published by the end of January 2022) in our subsequent analysis.

3.2 Data analysis

Thematic content analysis was used as the main analysis method, supplemented by the text analysis software, Leximancer 4.51. Manual coding was applied to analyse the 407 empirical articles. We coded each article in the research topic theme, research methods, and countries/regions of the research following Yang *et al.* (2021). In coding the research themes, we applied the inter-coder practice. One researcher went through all the articles, read the key information in title, abstract, keywords, conceptual framework (if applied), methods, and conclusion, and coded each article into a theme. Later the themes were reassessed with some smaller categories merging into more broad, inclusive categories. After the first researcher identified a list of relatively stable and reasonable theme categories, the second researcher used the already identified theme categories as the coding framework to code a randomly selected 40 cases (approximately 10% of the sample) in the dataset, without knowing the exact coding results of those cases by the first researcher. Inter-coder reliability was 87.5%, showing that the theme categories was solid and the coding was highly reliable. As research methods coding is straightforward and less arbitrary, the coding was shared between the two researchers.

To supplement the manual coding-based analysis, algorithm-based machine learning analysis was conducted using Leximancer 4.51. Specifically, thematic concept mapping was conducted on the abstracts and keywords of all selected articles. The most frequently mentioned concepts/words were identified by the Leximancer program. The whole data collection and analysis process is illustrated in Figure 1.

Place Figure 1 about here

4. Findings

4.1 Distribution of research themes in selected journals

Seven research themes were identified (Table 2): 1) impact on consumer psychology, experience, and behaviour, 2) response actions and recovery strategies, 3) impact on industry or industry sectors, 4) impact on industry workers or employees, 5) forecasting, 6) impact on community, people, and resident attitude, and 7) impact on business operations. It should be

noted that 84.3% of the articles were published in 2021, compared to only 8.9% published in 2020. This suggests that empirical research articles need a substantial length of time before it can be published. Detailed reports on the identified themes are provided in Section 4.4 below.

Place Table 2 about here

Articles in different themes are distributed in different journals with different hit ratios (Table 3). *Tourism Management (TM)* published most of its COVID-related articles in the ‘impact on consumer behaviour’ theme, and had a significant high number of articles in the ‘impact on business operations’ theme. Articles in the ‘impact on consumer behaviour’ theme were published/distributed in most of the journals, but more predominantly appeared in *International Journal of Hospitality Management (IJHM)*, *Current Issues in Tourism (CIT)*, *Tourism Management (TM)*, *Journal of Hospitality and Tourism Management (JHTM)*, *International Journal of Contemporary Hospitality Management (IJCHM)* and *Annals of Tourism Research (ATR)*. *IJHM*, *CIT*, *IJCHM* hosted more articles in the “response actions and recovery strategies” theme than other journals. Most articles in the theme of ‘impact on industry or industry sectors’ were found in *CIT*, *Tourism Economics*, and *IJHM*. *IJHM* hosted most articles in the ‘impact on industry workers’ theme, followed by *JHTM* and *IJCHM*. *ATR* hosted most of the ‘forecasting’ articles, followed by *Tourism Economics*.

Several patterns can be drawn from Table 3. Hospitality journals addressed more issues on industry workers. Consumer behaviour issues are commonly welcomed by both tourism and hospitality journals. Journals which clearly attend to current and contemporary issues like *CIT* and *IJCHM* tended to publish more articles in the response actions and recovery strategies theme.

4.2 Research methods used in the articles

We coded all the articles based on the research methods used. Table 4 shows that 72.5% of the articles used quantitative methods, whilst roughly one in five articles used some kind of qualitative methods. About 7 percent of the articles used mixed methods. Among those quantitative studies, more than half (54.9%) applied questionnaire survey as the data collection method. A majority of studies using questionnaire survey as the data collection method contracted their data collection to some crowdsourcing consumer panel data service companies, such as Amazon Mechanical Turk in the US, Wenjuanxing in China, Survey Sampling Spain SL in Spain, and Macromill Embrain in South Korea. A significant number of studies used secondary data in their analysis. We divided these studies into *economic modelling* studies if they explicitly applied economic modelling techniques and *secondary data analysis* studies if only simple quantitative analysis was applied. Some studies used textual data. We classified those studies that applied sophisticated and established algorithm-based data mining techniques as quantitative studies but treated those only applying simple content analysis on the text data in the qualitative category. The former recorded 14 articles, while only four studies used the latter.

Most of the qualitative studies used interviews to collect data. Other qualitative research methods included content/thematic analysis, case study approach, critical discourse/media analysis, the Delphi method, focus group, and fuzzy cognitive mapping.

4.3 Countries or regions of study

We coded countries or regions of study in each study as the country/countries or regions where the study subjects come from. As shown in Table 4, 80 out of the 407 articles had their study subjects in the US, 77 articles had their study subjects in China, followed by those in Spain (27), South Korea (18), Australia (13), Turkey (11), UK (8), Indonesia (8), Italy (8), Macau (8), Vietnam (7), and India (6).

4.4 Research themes

4.4.1 Impact on consumer psychology, experience and behaviour

The COVID-19 pandemic has made significant changes to consumer psychology and behaviours (e.g., Kock *et al.*, 2020; Zheng *et al.*, 2021). Forty-two percent of the articles fell into the theme of “impact on consumer psychology, experience and behaviour”. Generally, there were more articles discussing the pandemic’s impact on consumer behaviour in different consumption areas (e.g., travel, hotel, restaurant) than that on consumer psychology, and consumer experience. Studies on the impact of COVID on consumer behaviours can be further classified into studies of direct effects and studies of induced effects. Studies on COVID’s direct effect dealt with the direct influences of COVID on consumer behaviour. In this regard, the most relevant behavioural constructs were perceived risks and threats (e.g., Kim *et al.*, 2021a; Kim *et al.*, 2021b), safety concerns (Kim *et al.*, 2022), travel fear (Zheng *et al.*, 2021) and behavioural outcomes such as travel choice, holiday intention, and travel planning and decision making (e.g., Kim *et al.*, 2022; Shin *et al.*, 2022; Williams *et al.*, 2022).

As COVID has greatly changed the hospitality and tourism servicescape due to social distancing and health and hygiene requirements (Kim and Liu, 2022; Yu *et al.*, 2021), studies also addressed the indirect effects of COVID-coping measures such as mask-wearing (Brewster and Gourlay, 2021; Liang and Wu, 2022), social distancing (Zhang *et al.*, 2021), and the effect of the adaptive restaurant service setting (Taylor, 2020) on consumer perceptions and behavioural responses. The issue of corporate social responsibility (CSR) deserves a special note here. Though CSR was not an uncommon business practice before the pandemic, it is regarded as a more natural response action that tourism and hospitality businesses undertake to deal with the pandemic and its impact on consumer behaviours was examined (Huang and Liu, 2020; Shin *et al.*, 2021). For instance, Shin *et al.* (2021) found that hotels’ strategic philanthropy as a CSR action had negative effects on firm market value and customers’ booking behaviour during the pandemic.

Certain technological applications were regarded as effective measures that could reduce human service contact in coping with COVID infections, and thus the impact of these technological applications on consumer behaviours was examined. These technological applications include virtual reality tourism (Itani and Hollebeek, 2021), artificial intelligence/robot services (Chuah *et al.*, 2022; Li *et al.*, 2022), food delivery apps and drone delivery of food (Kim *et al.*, 2021c; Zhao and Bacao, 2020).

While most consumer behaviour studies included psychological constructs like trust, attitude, behavioural intentions, and satisfaction, some studies seemed to work more deeply into consumer psychology. In the tourism context, tourists’ psychological needs, travel anxiety, travel burnout, and travel fear and how these psychological states are influenced by COVID-19 were investigated (Cheung *et al.*, 2021; Yousaf, 2021; Zenker *et al.*, 2021; Zheng *et al.*,

2021). On the other hand, some consumer experiences during the COVID period, such as quarantined lodging stay (Wong and Yang, 2020), the changed OzNomads lifestyle traveller experiences (Williamson *et al.*, 2022), and dining experiences due to social distancing (Zhang *et al.*, 2021) were examined for their unique features due to the COVID effect.

4.4.2 *Response actions and recovery strategies*

Nearly one-fifth of the articles were found to be in the theme of “response actions and recovery strategies”. These response actions and recovery strategies covered a wide range of sectors and entities, including national tourism policy framework, tourism support policies, governments’ economic stimulation package, and digital marketing strategies (Ketter and Avraham, 2021; Khalid *et al.*, 2021; Wijesinghe, 2022; Zhai and Shi, 2022). Specific sector recovery measures in the general hotel sector (Lai and Wong, 2020), or subsectors like boutique hotels and bed and breakfast (B&B) (Cai *et al.*, 2021; Canhoto and Wei, 2021), gastronomy and wine tourism sectors (Alonso *et al.*, 2022), restaurants (Li *et al.*, 2021), air travel service (Bodolica *et al.*, 2021) were studied. At the firm level, both organisational capacities (e.g., learning, resilience) (Bhaskara and Filimonau, 2021; Schwaiger *et al.*, 2022), and entrepreneurs’ and managers’ reactions (Bonfanti *et al.*, 2021; Heredia-Colaco and Rodrigues, 2021) were explored. CSR strategies were studied as COVID reaction actions by some researchers (Lin *et al.*, 2021; Ou *et al.*, 2021).

4.4.3 *Impact on industry or industry sectors*

A significant number (71) of articles addressed COVID-19’s impact on different industries and industry sectors, including tourism (e.g., Pramana *et al.*, 2021), hotel (e.g., Ozdemir *et al.*, 2021), restaurant (e.g., Song *et al.*, 2021), peer-to-peer accommodation (e.g., Farmaki *et al.*, 2020), airlines (Kokeny *et al.*, 2022), and the gaming industry (Lim and To, 2022). In addition, the impacts of COVID-19 on global tourism (e.g., Karabulut *et al.*, 2020), national economy (Pham *et al.*, 2021), domestic tourism flows (Li *et al.*, 2022), and employment (Khan *et al.*, 2021) were investigated mostly by utilising secondary industry-level data.

4.4.4 *Impact on industry workers or employees*

The COVID-19 pandemic has significantly affected the work and life of workers. Over one in ten articles (12.7%) studied the impact of COVID on industry workers or employees. Hospitality workers are the most studied groups. Specifically, the effects of COVID-19 on employees’ job insecurity, stress, emotional exhaustion, turnover intention, career change intention, work attitude, life satisfaction and wellbeing, workplace spirituality, were extensively studied (e.g., Chen and Chen, 2021; Chen *et al.*, 2022; Kimbu *et al.*, 2021). One of the challenges facing the hospitality industry is that because of the pandemic, the hospitality sector may not be regarded as a preferred career choice. Chen and Chen (2021) studied a sample of unemployed and furloughed hospitality workers in the US during the COVID and found that these hospitality workers were financially strained, panic-stricken, and socially isolated; depression and panic led to their intention to leave the industry. It seems, therefore, that the damage caused by COVID-19 on industry workers’ confidence to work in the industry would cause a delayed recovery of the industry operation, if tourism and hospitality businesses cannot find workers who are willing to work in the industry after the pandemic.

4.4.5 *Other themes*

As shown in Table 2, other themes include *forecasting, impact on community, people, and resident attitude*, and *impact on business operations*, which recorded 10, 10, and 7 articles, respectively. Most of the forecasting articles were published in *Annals of Tourism Research*, promoted by the journal's tourism forecasting competition in the time of COVID-19 (Song and Li, 2021). Relatively few studies attended to the impact of COVID-19 on those peoples whose life is dependent on tourism. As an exceptional case, Scheyvens *et al.* (2021) examined the impact of the pandemic on pacific peoples' livelihood and wellbeing; their study showed that many people resorted to traditional skills, social capital, and access to customary land to cope with the negative impact of COVID-19 on their household income. In another case, Gabriel-Campos *et al.* (2021) investigated rural community's resilience and adaption capacities to COVID-19 and community-based eco-tourism in Peru.

Among the sporadic themes or topics identified, two studies on hospitality and tourism students' career attitudes deserve special attention. It should be noted that a research void exists regarding COVID's influence on tourism and hospitality education. Birtch *et al.* (2021) indicated that the pandemic reduced hospitality students' occupational identification and their job choice intentions; similarly, Reichenberger and Raymond (2021) found that while temporary exit may be considered a career strategy during the pandemic, in the long term, tourism management students remained committed to their originally selected career field.

4.5 Major theories applied

A number of theories are used in the selected articles (Table 5). The most frequently adopted were theory of planned behaviour, social exchange theory, conservation of resources theory, protection motivation theory, post-traumatic growth theory, and terror management theory. Theory of planned behaviour was more often used to examine tourists' travel decision making in the COVID context and different types of behavioural intentions (e.g., Braje *et al.*, 2022; Shin *et al.*, 2022). Conservation of resources theory was used to study hospitality employees' job insecurity and emotional exhaustion (e.g., Chen and Eyoum, 2021). Protection motivation theory posits that when facing a threat, people apply cognitive mediation process which includes perceived threat and perceived efficacy in coping, which determines protection motivation and relevant protective behaviours (Qiao *et al.*, 2022; Zheng *et al.*, 2021). The pandemic and increasing cases of COVID death will raise people's awareness of death threat. Therefore, terror management theory seems to be especially applicable in studying travel behaviours during the pandemic (Miao *et al.*, 2021). However, only a couple of empirical studies applied terror management theory implicitly. Terror management theory postulates that death awareness will trigger people's psychological defence mechanisms by the maintenance of worldviews and self-esteem and appears to be particularly applicable in studying travel behaviours during the pandemic (Miao *et al.*, 2021).

Place Table 5 about here

4.6 Leximancer conceptual mapping results

To supplement the manual coding-based thematic analysis, we also used the Leximancer 4.5.1 software to run automated analysis on the abstracts and the keywords of the selected articles. As shown in Figure 2 and Table 6, "COVID", "impact", "travel", "perceived", "hotel", "tourism", "industry" were the most frequented words in the abstracts, and "theory",

“intention”, “tourism”, “Tourism”, “Crisis”, “risk”, “Social”, and “crisis” were frequently used in the keywords.

Place Figure 2 about here

Place Table 6 about here

Combining the thematic analysis results and the Leximancer work frequency and co-word analyses, an overall knowledge mapping framework was generated (Figure 3). Figure 3 shows that demand-side issues are mostly focused on consumer behaviour and experience, while supply-side issues include impact on industry or industry sectors, impact on business operation, impact on workers and industry employees and forecasting. The left-hand side and bottom part of the circle denote studies pertaining to people (consumers, residents and workers).

Place Figure 3 about here

5. Discussion and Conclusions

5.1 Conclusions

This study provided a timely review of the COVID-related empirical research published in 19 major tourism and hospitality journals until January 2022. This study found that 84.3% of the empirical papers in the sample were published in 2021, compared to only 8.9% in 2020. This finding supports the interrogation that prior review studies (e.g., Utkarsh and Sigala, 2021; Zopiatis *et al.*, 2021) may have missed a significant number of empirical studies that emerged in 2021.

This study identified 7 research themes through thematic content analysis of selected articles. Compared to previous review studies (Utkarsh and Sigala, 2021; Yang *et al.*, 2021; Zopiatis *et al.*, 2021), the finding highlighted a more prominent and salient pattern of empirical COVID research in tourism and hospitality focussing on consumers. Our study contributes to the literature by providing a clear research mapping framework of COVID-rated empirical studies in tourism and hospitality and identifying the gaps for future research.

Unlike the studies of Utkarsh and Sigala (2021) and Zopiatis *et al.* (2021) that rely predominately on bibliometric software (both used VOS Viewer) in their analysis, our study adopted a systematic review approach supplemented with Leximancer software analysis. While bibliometric analysis software programs such as VOS Viewer and Leximancer can run co-word analysis with visual presentation of conceptual mapping, they do not seem to outperform in research theme identification in the current review task.

5.2 Theoretical implications

Tourism and hospitality research seems to be influenced by COVID-19 in different ways. In one way or another, the pandemic acted as a trigger for researchers to rethink or re-evaluate the essential role and functions of tourism in human society. It further entrenched the divide and polarization of the tourism academy in researchers' epistemic views of what tourism is and how tourism can be practiced. Higgins-Desbiolles's (2021) debate with Butcher (2020) highlights a binary research mentality, at least with some members in the academy, that two

competing schools of thought, the ‘pro-growth’ camp, and the ‘pro-limit’ camp, exist in the academy with contrasting epistemic views of tourism. To what extent the binary classification of tourism scholars can reflect the reality in the academy remains largely doubtful, as the silent majority may take a position along the continuum between the two extremes. Upon close examination, it seems the pandemic just worked as another trigger for such debates, which already occurred pre-COVID. Indeed, issues of over-tourism, degrowth in tourism, sustainable, ethical, and responsible tourism, had been well received by tourism researchers before the pandemic.

Nevertheless, the COVID-19 pandemic provided the “pause moment” for tourism researchers to reflect on their positions, existing paradigms, and possible alternative futures (Gretzel *et al.*, 2020; Sigala, 2020). Many commentators argue that both tourism industry and tourism research will be transformed due to COVID-19 (Benjamin *et al.*, 2020; Fletcher *et al.*, 2021; Gretzel *et al.*, 2020; Sigala, 2020). However, how the transformations unfold themselves is yet to be seen. On the research front, regular research scoping reviews like the current study may help to identify the turning curves in a timely way.

During the COVID-19 pandemic, the demand for knowledge from the industry in surviving and coping with the pandemic threat would be understandably high. Research could play a critical role in providing the needed knowledge to aid in industry response and recovery. Knowledge translation from the tourism academy to the industry seems to be critical. However, our review disclosed that most of the articles might not be industry user-friendly in terms of knowledge translation. Many abstracts of the reviewed articles would fail to communicate succinct, jargon-free, and straightforward take-away message of knowledge to an industry reader. Even a well-trained researcher may not be able to quickly grasp the new knowledge in a paper just by reading the abstract and not going to check relevant sections of the text. Dennis (2019), in evaluating the publishing trend in the field of information system, noted that obsession with theory has been a malaise in that field. Tourism research is generally regarded as an applied field of research; journal editors and reviewers are thus reminded that knowledge translation in industry practices should be highly appreciated in tourism research, especially in the context of COVID-19.

5.3 Practical implications

This study generates practical implications to both industry practitioners and researchers. To industry practitioners, our study provides an index for them to check the current state of COVID research and retrieve relevant knowledge to aid in their COVID coping and recovery strategies and decision making. For researchers, our review would enable better informed research agenda setting and gap spotting. Based on our research findings, we identify the following research gaps. *First*, almost all the studies are tourism (including hospitality)-centred, taking tourism, or tourism-related phenomena as the main concern and examining the impact from COVID-related variables on tourism-related variables. Only two studies (Farzenegan *et al.*, 2021; Selvanathan *et al.*, 2021) took a reversed view angle to look into the effect of international tourism on the spread of COVID cases. Researchers in tourism and hospitality have been promoting inter-disciplinary and post-disciplinary practices in the field. It seems more studies can examine how tourism can contribute to the changing social, political, and economic landscapes in the COVID context. Tourism and hospitality researchers are suggested to look beyond tourism and adopt inter- and post-disciplinary

perspectives in their studies. *Second*, although vaccination seems to be key to rebooting tourism, very few studies have started to attend to vaccination-related issues in relation to travel, tourism, and hospitality, with some exceptions (e.g., Gursoy *et al.*, 2022; Williams *et al.*, 2022). There seems to be a large space to examine tourists' psychology toward vaccination and how vaccination-related behavioural variables can influence tourist behaviour. Given that COVID may prove to be a long-lasting situation for travel and tourism, vaccination related studies in TH seem to be important to advance the knowledge edge.

Third, COVID has substantially changed the geo-political relationships among countries which serve as source markets and destinations to each other before the pandemic. Research could re-examine the effect of changed geo-political relations among countries on destination image and tourist attitude of relevant countries. Zenker and Kock (2020) argue that change in destination image would be a research focus in the COVID-context; yet more destination image studies are expected. *Fourth*, despite continuing efforts on sustainability, inclusivity, and sustainable futures (Higgins-Desbiolles, 2021; Yang *et al.*, 2021), it seems more research needs to attend to sustaining the livelihood of peoples and communities that heavily rely on tourism pre-COVID (Scheyvens *et al.*, 2021). Figure 3 shows studies on people mainly focussed on consumers and industry workers but largely overlooked communities and residents. Therefore, future research should focus more on COVID's impact on the life of local residents in a destination who used to rely on tourism for livelihood. *Fifth*, more research is needed to verify the impact of COVID on tourism and hospitality workers' career attitudes and intentions. There is a critical and practical need to sustain the industry by sustaining the workforce. *Sixth*, little is known on the impact of COVID on tourism students' career attitude and intention (Birtch *et al.*, 2021). Investigating how COVID impacts on tourism and hospitality workforce seems to be a critical issue (Baum *et al.*, 2020), not only for the industry, but also for the tourism academy, thereby warranting more research attention. *Seventh*, more research needs to be done to help tourism and hospitality SME businesses to adapt, innovate, and build the resilience capacity to survive the pandemic. *Eighth*, more studies are needed to understand the impact of Information Technology (IT) on tourism and hospitality industries. For example, as COVID-19 has made new approaches such as virtual reality tourism (Itani and Hollebeek, 2021) more popular, it would be interesting to understand whether/how consumers' traveling behaviours have changed due to virtual reality tourism. *Nineth*, new models of tourism governance responding to the required paradigm change, transformation, and sustainability need to be identified and evaluated. The above nine points show a non-inclusive future research agenda based on the findings of the current review study.

5.4 Limitations and future research

This study only used publications data in two years. The two-year span of review may still be regarded too short to reveal the essential changes brought by COVID to paradigm shift, theory adoption, topic selection and research methods in the field of tourism and hospitality research. It is likely that the coronavirus will keep mutating and COVID will evolve to be a long-term co-existence with human beings. Therefore, regular review studies like this to examine the changes in research and how the academia addresses industry challenges brought by COVID are highly recommended in the future.

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