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To cite this article: Panagiotis Stamolampros & Dimitrios Dousios (18 Oct 2023): Employee satisfaction during the pandemic in the tourism and hospitality industries, Current Issues in Tourism, DOI: [10.1080/13683500.2023.2268798](https://doi.org/10.1080/13683500.2023.2268798)

To link to this article: <https://doi.org/10.1080/13683500.2023.2268798>



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Employee satisfaction during the pandemic in the tourism and hospitality industries

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ABSTRACT

How has the COVID-19 pandemic affected employee satisfaction in Tourism and Hospitality industries? This paper uses a topic modelling approach to explore the pandemic effects utilizing a large sample ($N = 733,746$) of employee-generated online reviews. Comparing online employee feedback during the pandemic to the pre-pandemic period, the study indicates a shift in topics discussed, suggesting changes in employee satisfaction drivers. During the pandemic, there was a noticeable increase in positive discussions regarding work stress, customer behaviour, and managerial practices. Work-life balance and management behaviour were found to be more closely linked to increased dissatisfaction, whereas employee treatment, working environment, and company culture were associated with higher satisfaction levels. The present study contributes to the understanding of employee satisfaction in tourism and hospitality services as the first to measure the impact of COVID-19 by harnessing the power of online employee user-generated content providing practical implications for theory and employee practice.

ARTICLE HISTORY

Received 18 May 2023
Accepted 4 October 2023

KEYWORDS

Employee satisfaction; high contact services; topic modelling analysis; COVID-19; work-life balance; company culture

1. Introduction

It is not an overstatement that the tourism and hospitality industries experienced their worst crisis during the latest pandemic (UNWTO, 2021). COVID-19 has unparalleled systemic effects leading to a historic global slowdown (Gössling et al., 2020). When inquiring about the outcome of epidemics, research is preoccupied with understanding its global (Yu et al., 2021) and economic impact (Lim & To, 2022) with current COVID-19 tourism and hospitality research appearing to follow a similar trajectory with little effort to explore the socio-cultural influences of such a setting. Research appears limited to depict employee perceptions and emotions regarding the workplace during the COVID-19 pandemic (Park et al., 2022). Intuitively, employees in such high-contact service environments bear significant emotional, physical, and financial strains coming- among others- from uncertainty and unemployment threats (Chen, 2021).

This paper extends current literature by identifying the impact of COVID-19 on tourism and hospitality stakeholders through the lens of online employee-generated content. This important contribution captures variation in employee satisfaction across two distinct chronological periods. Such an approach is beneficial to address shortcomings of existing academic survey-driven research, where

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 Supplemental data for this article can be accessed online at <https://doi.org/10.1080/13683500.2023.2268798>.

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aspects not contained within survey instruments remain unaccounted for, rendering the operationalization of key constructs insufficient (e.g. Jung et al., 2009). Owing to the nature of employee satisfaction, survey-driven examinations are problematic and fail to account for the latent character of employee satisfaction. A lack of comparability is another critical shortcoming of extant research interested in unmasking employee satisfaction in such a complex and discursive set of conditions explained above. Due to the cross-sectional nature of currently published work, research is silent on drawing comparisons between employee satisfaction before and during the pandemic. This is a significant omission that fails to account for the dynamic nature of job satisfaction (Chen et al., 2011), providing much-needed comparisons that would enhance understanding of employee satisfaction.

Employee online-generated content has attracted recent attention in management, finance, and tourism research (Green et al., 2019; Karatzas et al., 2023; Symitsi et al., 2018) as a result of its several advantages and the opportunity to access the opinions of thousands of employees systematically from all sectors (Symitsi et al., 2021). In unprecedented circumstances such as those during COVID-19, new themes likely arise that are not captured from existing scales and/or existing themes may change their weight of importance. Thus, our approach takes advantage of employee user-generated content's numerical and textual aspects.

Considering the above research gaps, the present study aspires to explore the effect of COVID-19 on tourism and hospitality employee satisfaction by addressing the following research questions: 1) *Which latent themes drive employee satisfaction and dissatisfaction during the COVID-19 pandemic?* 2) *Which employment characteristics contributed most strongly to employee satisfaction during the COVID-19 pandemic?* 3) *What are the differences in employee online reviews between the two periods?*

2. Literature review

2.1. Employee satisfaction in tourism and hospitality

In high-contact service contexts, employee satisfaction reflects the outcome of positive work behaviour and is inherent in shaping the customer experience (Kurdi et al., 2020). Satisfied employees typically exhibit higher levels of motivation and engagement which, in turn, influences the quality of service provided (Heskett et al., 1994). Consequently, employee satisfaction represents an instrumental determinant in predicting both individual and organizational performance and turnover intentions (Stamolampros et al., 2019).

In understanding job satisfaction enablers, research suggests that work-related values are important for job satisfaction (Li et al., 2023). A meta-analysis by Kong et al. (2018) classified determinants of job satisfaction, highlighting the importance of individual and organizational factors. In terms of individual determinants, job satisfaction is conditioned by principal factors such as skills (Ko, 2012), work engagement (Lu et al., 2016), attitudes towards management (Atadil & Green, 2020), work-life balance and quality of life (Uysal et al., 2016) and work flexibility (Schneider & Treisch, 2019). A large body of tourism and hospitality research also explored organizational factors contributing to job satisfaction. These studies identified several conditions, clustered most notably across empowering leadership (Shehawy, 2022), organizational support (Park et al., 2019), and career advancement (McPhail et al., 2015) among others.

Job satisfaction is vital for attracting and retaining skilful employees that add value to a firm's service offering. This is particularly important in the tourism and hospitality context, which is characterized by high turnover rates (Dogru et al., 2023). The relationship between job satisfaction and turnover intention is now well understood, with the former being identified as a critical predictor of employee turnover intentions (Bajrami et al., 2021; Tschopp et al., 2014). Employee turnover leads to considerable challenges for businesses, resulting in direct and indirect costs. Direct costs are manifested in organizational and social capital losses (Tanova & Holtom, 2008; Yang et al., 2019). Indirect costs are hidden and may account for 75-80% of the total costs incurred (Jang &

George, 2012), reflected in reduced customer satisfaction. This decline may be attributed to unsatisfied employees' poor performance, which precedes their departure from the company. Beyond turnover intent, 'quiet quitting' may also be an indirect cost precipitated by job dissatisfaction, and its implications in tourism and hospitality may be devastating and costly (Hamouche et al., 2023). This is an important assertion, as in these industries exceptional customer service is fundamental. Disengaged employees can significantly undermine the customer experience resulting to service and organizational performance concerns (Menguc et al., 2013).

2.2. The impact of COVID-19 pandemic on tourism and hospitality employee satisfaction

Prior to COVID-19, the impact of pandemics on tourism and hospitality research was considered a niche topic (Zenker et al., 2021), despite the common perception that these industries are susceptible to external shocks (Jiang et al., 2019) and vulnerable to major crises and disasters (Cró & Martins, 2017).

COVID-19 have influenced employee social and psychological well-being (Kimbu et al., 2021), with its links remaining largely unexplored, as only a handful of studies attempt to understand this association (Cheng et al., 2022). It is reasonable to expect that employees in such high-contact service environments bear significant emotional, physical, or financial strains coming, among others, from uncertainty and unemployment threats (Chen, 2021). A systematic review of COVID-19-related work in tourism and hospitality revealed that current research interests cluster across four major themes, namely 1) the impact of COVID-19 tourist decision-making, 2) the future of post-COVID-19 tourism, 3) managing change in tourism and 4) the COVID-19 impact on tourism and hospitality stakeholders (Sigala, 2021). Due to induced anxiety and job stress as a result of the pandemic, the impact on employee performance represents an important area of research (Sigala, 2021), with industry experts echoing the calls to understand changes in the psychology of different stakeholders such as travellers and employees (Assaf et al., 2022). Regarding health safety stressors, Cheng et al. (2022) reported a negative impact of fear of COVID-19 on flight attendants' work engagement and service behaviours. Karatepe et al. (2021) identified the relationship between COVID-19 as a stressor, leading to elevated mental health problems and the propensity to be late for work and absenteeism. Wong et al. (2021) identified hotel-work, work demands, and unethical labour practices as three groups of occupational stressors.

In examining the link between job insecurity and satisfaction in COVID-19, Bajrami et al. (2021) suggest that job insecurity, organizational change, and risk-taking behaviours predicted adverse outcomes in job satisfaction. Jung et al. (2021), demonstrated a negative association between job insecurity and employee engagement whereas Vo-Thanh et al. (2020) asserted that an organization's response to reduce perceived job insecurity raises job performance. There is growing evidence that due to COVID-19, salary cuts and unpaid leave have been implemented (Foo et al., 2021), and there is an effort to understand the effect of furlough strategies (Zheng et al., 2022).

In exploring employees' perceived well-being, lack of social support, risk of unemployment, and COVID-19-generated panic are all perceived as key hazards (Chen, 2021). This is consistent with studies asserting that job insecurity influences employees' anxiety and depression (e.g. Aguiar-Quintana et al., 2021). With particular emphasis on the organization's response during COVID-19, Ortiz-Bonnin et al. (2023) empirically depicted that the positive link between organizational response and job performance is indirectly channelled via satisfaction with work-life balance. Organizational responses that followed the centre of disease control and prevention guidelines, made employees feel grateful (Guzzo et al., 2021). In exploring the effects of COVID-19 on turnover intentions, McCartney et al. (2022) suggested a positive relationship between job satisfaction, workload and pay, and company support, with job satisfaction being negatively associated to turnover intentions.

To date, there has been a notable lack of research that examines tourism and hospitality employee perceptions and emotions in the workplace, in the context of the COVID-19 pandemic. In one of the very few studies that utilized opinion mining through secondary data, (2022), demonstrated that tourism and hospitality employees' perceptions of anger and anxiety were amplified, as the number of COVID-19 cases increased. This study aims to address this gap. We do so by investigating the impact of the COVID-19 pandemic on employee satisfaction in the tourism and hospitality industries using 733,746 reviews obtained from Glassdoor. In particular, we conduct an empirical analysis of numerical and textual data derived from online employee reviews during the pandemic and compare them with the pre-pandemic period. This is a highly beneficial approach as it provides us with the opportunity to access the opinions of thousands of employees systematically from corresponding industry sectors (Symitsi & Stamolampros, 2021).

3. Data and methodology

3.1. Sample and descriptive statistics

Our empirical analysis considered both the numerical and textual content of all US tourism and hospitality organization's employee reviews from Glassdoor, for the period 05/2008–10/2021.¹ From the universe of all Glassdoor employee online reviews, a subset has been created based on Glassdoor's internal classification for selecting all companies that belong in two categories (a) restaurants, bars, and food services; and (b) travel and tourism. This yielded a representative sample of 733,746 reviews (248,047 during the pandemic), as presented in Table 1.

A spearman correlation matrix confirmed the strong monotonic association among all different individual rankings (See Online Appendix Figure A1). The overall rating appears to have had a stronger association with *Cultural Values* and *Senior Leadership*. The direction and strength of the association is almost identical with that depicted in the pre-covid period. To decompose the more important job elements on overall satisfaction, we computed the variable importance of the variables of interest. This is performed with several models that all conclude that the most important elements were *Cultural Values* and *Work-Life Balance*. Figure 1 presents the mean decrease in Impurity (or Gini importance) measure in random forest. The mean decrease in impurity, often referred to as Gini importance, serves as a metric employed within random forests to evaluate the significance of individual features in enhancing prediction accuracy. It offers a means to quantify the extent to which each feature contributes to the reduction of impurity (or enhancement of purity) of the target variable during the construction of decision trees within the random forest ensemble. The higher the value of mean decrease accuracy or mean decrease Gini score, the higher the importance of the variable in the model.

3.2. Textual analysis

Employee user generated content has profound advantages in explaining variation in high-contact service environments (Stamolampros et al., 2019). This is particularly important in the case of latent themes extracted from unstructured data of online reviews (e.g. Korfiatis et al., 2019). Online reviews and other social media content have peculiarities in terms of their information content, as the

Table 1. Sample Characteristics.

Total Number of Reviews	733,746
Total Reviews (former)	413,082
Total Reviews (current)	320,664
Total Number of Employers	17,817
Average Number of Employees	1,088.15
Median Number of Employees	38

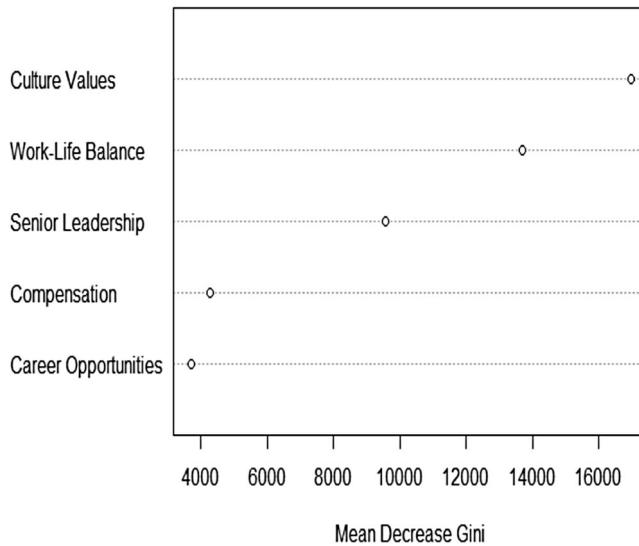


Figure 1. Variable Importance.

posters should contain all the necessary information within a limited number of words. Büschken and Allenby (2016) found that although posters may discuss a mixture of different topics on a review level, online review sentences tend to pertain to a unique topic. Aligning with these ideas, we also observe that employee online reviews usually contain a mixture of different topics (e.g. salary, training, environment). However, on a sentence basis, the focus is on a unique topic. Therefore, the topic modelling approach presented here captures the distribution of both words and topics on the sentence level.

3.2.1. Data pre-processing

The analytical process of this study followed a sequence of pre-processing steps. A graphical presentation of these steps can be found in Figure 2. The first step was the creation of the sentence-based corpus. Then, we pre-processed the corpus by cleaning and selecting only the informative parts. This step included; correcting common word contractions, tokenization, removal of punctuation, numbers, symbols, and stopwords (using the list of SMART stop words), part-of-speech tagging, and retaining of only verbs, nouns, adverbs, and adjectives (Korfiatis et al., 2019), removal of infrequent words, (the threshold we set was to appear <15 times), removal of name entities. With these steps, we avoided misspelling, infrequent words, and other types of noise. The next step was the selection of the appropriate number of topics per corpus. This was done with a combination of criteria which included four metrics which at a later stage were fine-tuned with the criteria of

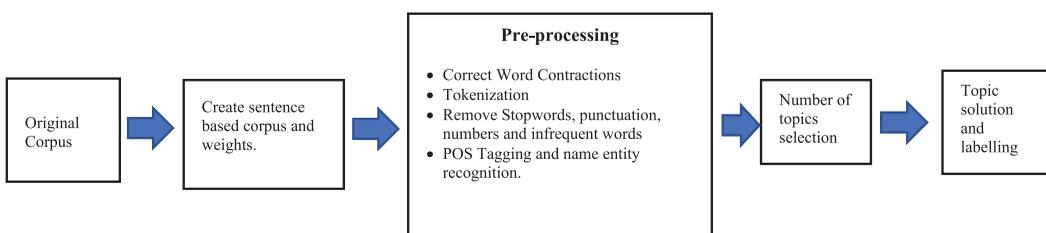


Figure 2. Corpora pre-processing pipeline.

Heldout likelihood, Exclusivity, and Semantic coherence (Roberts et al., 2016) as well as human judgment. The final step included topic estimation through LDA (Blei et al., 2003) and labelling.

4. Results

4.1. Estimating the topic solution for positive and negative employee satisfaction

An overview of the optimal number of positive and negative topics identified from the LDA solution is presented in Table 2 ($K = 19$) and 3 ($K = 15$). Each table contains the top 7 loading words per topic.² Following consultation with two academic experts, each topic has been defined and labelled accordingly. Regarding positive feedback topics, we observed that most numerical categories were also observed in the textual part of the reviews. Consequently, we identified topics related to career opportunities and advancement (Topic 3), company culture (Topic 4), compensation and benefits (Topic 7, Topic 5, Topic 16), and management (Topic 11). However, we also observed factors that were not captured by the Glassdoor's predefined scales, such as the working environment and positive interactions with colleagues and customers (Topic 14, Topic 9, Topic 13, Topic 18) and in addition, the importance of work flexibility and convenience of part-time jobs in the industry for students (Topic 19, Topic 10).

To explore the association of topics with employee satisfaction or dissatisfaction, we first assigned each review to a particular topic based on its maximum gamma probability, and then, we computed the average review rating per topic. Figure 3 suggests that Topics #1, #13, #3, #4, #12, which are topics related to employee treatment, management, advancement, and company culture, contribute most strongly to employee satisfaction as they have an average rating above 3.5 and close to 4. On the opposite side, Topics #17, #6, #5, and #15 correlate less with employee satisfaction. These topics focus on peripheral job characteristics such as perks and work location among others. In a period characterized by lockdowns and social isolation, social interaction represents an important aspect that emerged in the discussion of employees.

In addition to investigating the associations among topics and employee satisfaction and dissatisfaction, topic relevance to overall positive reviews during and in pre-pandemic periods was also evaluated. Figure 4 reported a dramatic increase in topics associated with work arrangement/flexibility (#10) and rapport (#14).

Table 2. Topic Solution for Positive Feedback.

Topic #	Topic Label	Top 7 Words
1	Caring Employee Culture	employee, company, care, family, feel, people, treat
2	Continuous Skills Development	learn, experience, customer, service, skill, lot, job
3	Opportunity for Growth	opportunity, company, growth, lot, grow, advancement, career
4	Company Culture	company, team, culture, people, value, leadership, business
5	Shift Compensation	money, tip, shift, busy, time, lot, decent
6	Complimentary Food Offerings	free, food, discount, meal, coffee, shift, drink
7	Competitive Pay and Benefits	pay, decent, benefit, wage, competitive, salary, time
8	Customer Service Excellence	food, customer, service, restaurant, quality, product, love
9	Positive Social Connections	people, meet, lot, love, fun, customer, friend
10	Adaptable Work Schedules	flexible, schedule, hour, scheduling, school, easy, time
11	Career Advancement and Management Development	manager, hard, management, store, level, position, move
12	Supportive Management	management, training, life, team, balance, employee, support
13	Positive Work Atmosphere	environment, friendly, team, atmosphere, fun, staff, management
14	Friendly Co-Worker Relations	nice, friendly, people, co-worker, worker, manager, staff
15	Quality Company Facilities	hotel, discount, employee, location, beautiful, event, nice
16	Benefits and Insurance	benefit, pay, time, health, travel, flight, insurance
17	Positive Work Experience	job, pro, time, company, day, people, love
18	High-Energy Work Environment	fast, environment, pace, fun, people, food, time
19	Flexible Student Employment	job, easy, time, college, pretty, school, Student

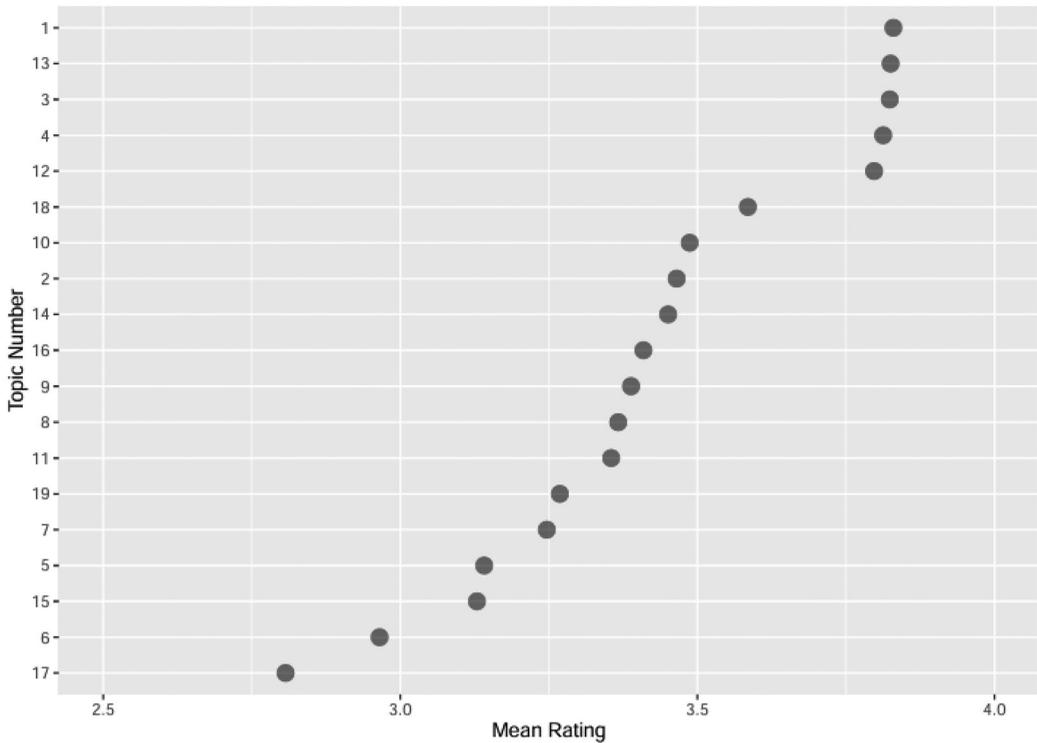


Figure 3. Average Employee Satisfaction per Positive Topics.

In terms of negative feedback, [Table 3](#) provides an overview of identified topics. Topics were pre-occupied with work-related (Topics #1, #3, #13, #14, #15) and organizational activities (Topics #7, #8, #9, #10, #11). Similarly, to the positive feedback the analysis reveals topics that capture all the rating dimensions directly measured in Glassdoor online reviews but also topics that are not measured, such as, among others, customer behaviour (Topic #2) or employee turnover (Topic #1). Topics #4, and #8 seem to contribute most to employee dissatisfaction with the topic solution revealing discontent with the management attitude and work-life balance ([Figure 5](#)). On the other hand, negative topics that are more relevant to the industry or the nature of the job, such as Topics #12 and #3, seem not to punish the overall satisfaction rating of a particular employer.

Table 3. Topic Solution for Negative Feedback.

Topic #	Topic Label	Top 7 Words
1	High Employee Turnover	staff, schedule, change, turnover, constantly, short, rate
2	Customer Behaviour	customer, people, rude, worker, lot, service, deal
3	Excessive Workload and Low Wages	job, hard, lot, wage, expert, start, minimum
4	Lack of Employee Support	employee, care, life, balance, treat, owner, family
5	Inadequate Pay and Benefits	pay, low, benefit, raise, salary, amount, bonus
6	Inadequate Tips for Servers	food, tip, money, restaurant, server, run, table
7	Leadership & Training Deficiencies	lack, training, team, corporate, level, leadership, communication
8	Poor Upper Management	management, bad, poor, upper, terrible, horrible, suck
9	Store Management Issues	manager, store, people, position, hire, location, train
10	Problems with HR and Reviews	call, issue, tell, fire, hr, reason, review
11	Unidentified (Car Rental Industry)	clean, car, favourite, drive, front, play, pick
12	Hotel Industry Challenges	con, business, cut, hotel, industry, due, experience
13	Working Stress	time, busy, environment, fast, stressful, lot, slow
14	Poor Career Development	company, move, opportunity, growth, base, advancement, culture
15	Work Schedule	shift, time, day, hour, break, schedule, stay

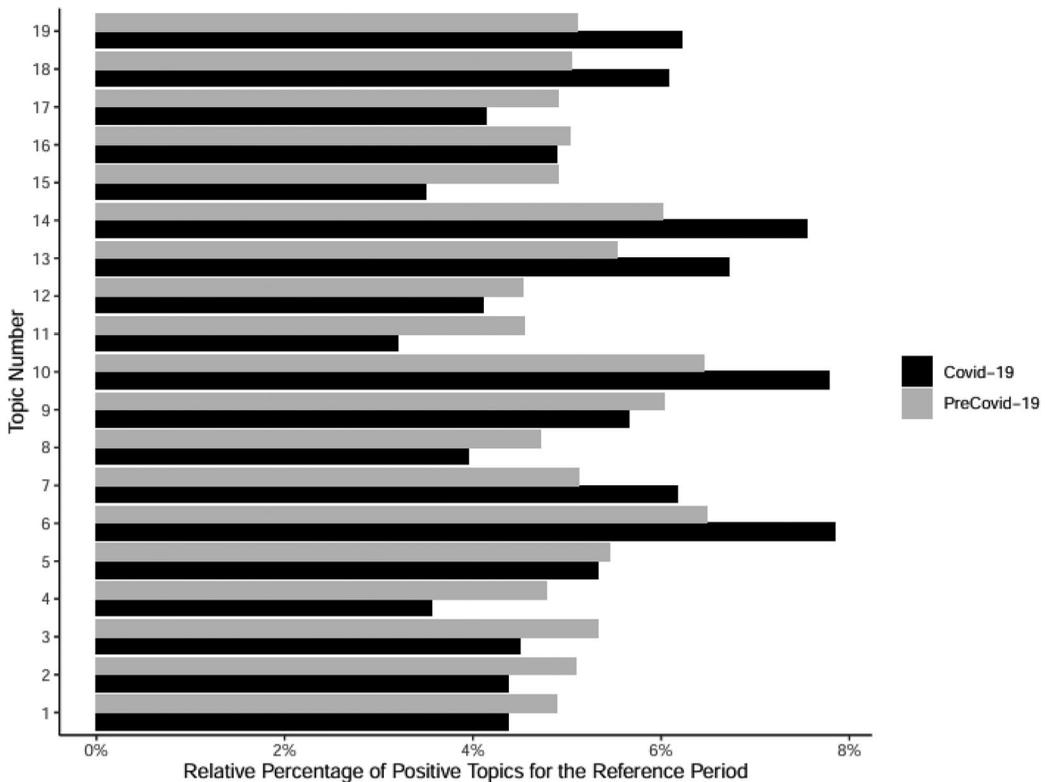


Figure 4. Positive Topic Relative Percentage to Overall Reviews During and Pre-Pandemic.

Figure 6 reported changes in topic distribution for the negative corpus between the two periods, empirically depicting that during the pandemic, the three most important increases were associated with working stress (#13), managerial attitude (#8), and customer behaviour (#2).

5. Discussion

Job satisfaction represents a precursory condition for workplace and organizational productivity and effectiveness (Blattner & Walter, 2015; Bowen, 2016; Han & Bi, 2023; Robbins & Judge, 2012) and leads to higher levels of service quality. This is particularly relevant in a high-contact service environment, where interactions among customers and service employees shape the service experience (Kong et al., 2018; Min & Min, 2006). Previous studies exploring job satisfaction determinants and outcomes in tourism and hospitality suggest the interplay among satisfaction, task characteristics, and turnover intentions (Ferreira et al., 2017).

Prioritizing employee well-being is an essential objective for tourism and hospitality firms (Tomasella et al., 2023; Shehawy, 2022). This is a key finding confirmed in our study by identifying relevant topics. Notably, role clarity, work environment, managerial evaluation, and transparent communications all positively impact employee satisfaction (Guzzo et al., 2021; Liu-Lastres et al., 2022). This is in agreement with our depiction of *company culture* (Topic 4). Previous research suggests that employees who experience a sense of fairness within the organization are more satisfied and demonstrate a strong proclivity for organizational citizenship (Aguiar-Quintana et al., 2021; Nadiri & Tanova, 2010). In addition, employee development, training, and advancement opportunities contribute to satisfaction (Kong et al., 2018; McPhail et al., 2015). Our topic solution empirically validated these theoretical assertions, which identified *career opportunities and advancement* (Topic 3) as key contributors to job satisfaction.

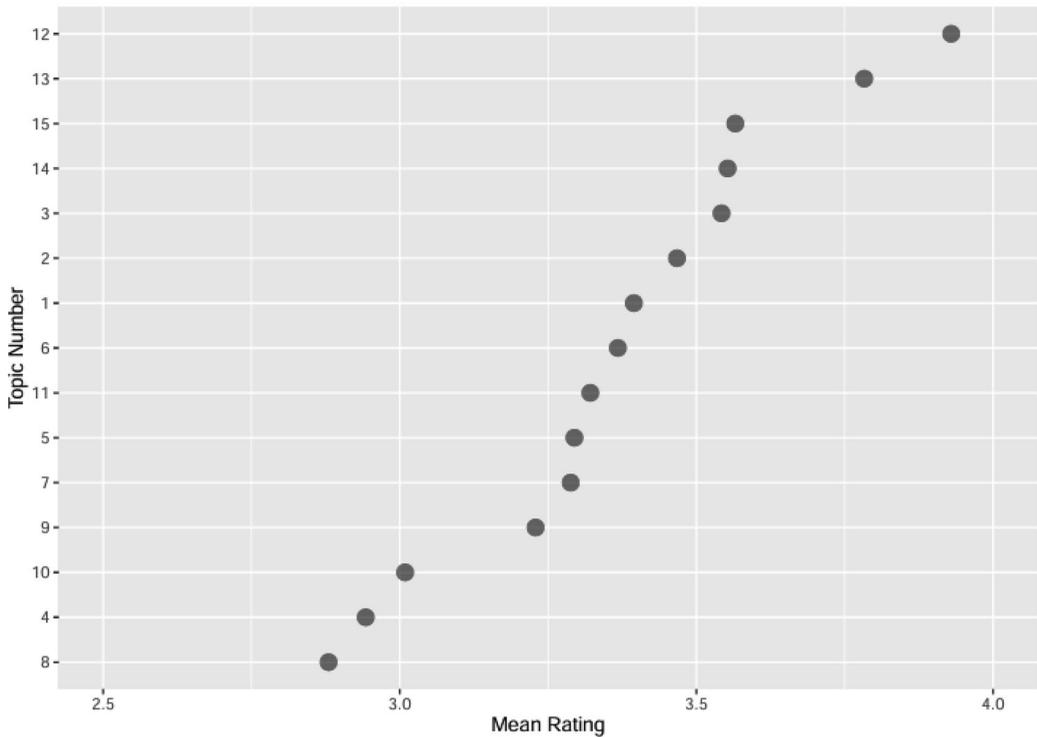


Figure 5. Average Employee Satisfaction per Negative Topics.

In terms of employee well-being, in line with the two-factor motivation theory, research suggests that relationships with co-workers, colleagues, and customers have a positive impact on job satisfaction (Bufquin et al., 2017; López-Cabarcos et al., 2015). This is relevant to the assertion that positive behaviours are fostered through social exchange relationships (Ghaedi et al., 2021; Shehawy, 2022) and identified in our findings in topics related to *rapport* (topic 14) and *work environment* (topic 18) that demonstrate a positive effect on job satisfaction. Regarding work activities, topic solutions related to *work arrangements* (topic 10) and *work characteristics* (topic 17) reflect the importance of investment in human resource practices and policies and its firm performance implications (Lim & Ok, 2021) and are in line with recent research suggesting that employee empowerment enhances job satisfaction (Glaveli et al., 2019).

On the contrary, employee dissatisfaction affects work commitments and leads to turnover (Li et al., 2023). This important dimension is captured from several identified topics. In more detail, research investigating turnover determinants and outcomes in travel and tourism identified, among others, customer and management expectations as key employee stressors (Stamolampros et al., 2019). This is clearly depicted on topic solutions identified concerning *customer behavior* (topic 2), *leadership* (topic 7), and *upper and line management* (topics 8 and 9). In addition to managerial level stressors, work and personal life imbalance (Choy & Kamoche, 2021) is depicted in topic 4. High turnover drivers are identified at the work schedule, such as working hours (Ariza-Montes et al., 2019) and employment conditions (Karatepe et al., 2021). These are clearly captured on *work schedule* (topic 15) and *job characteristics* (topic 3) topics, respectively. *Employee compensation* (Gallardo et al., 2010; Lillo-Bañuls et al., 2018) is a key contributor to dissatisfaction which is well demonstrated in topic 5 as a critical determinant of employee dissatisfaction.

As reported in Figure 4, there has been a radical increase in topics related to employee activities and well-being during the pandemic. This addresses the call for research that explores the well-being

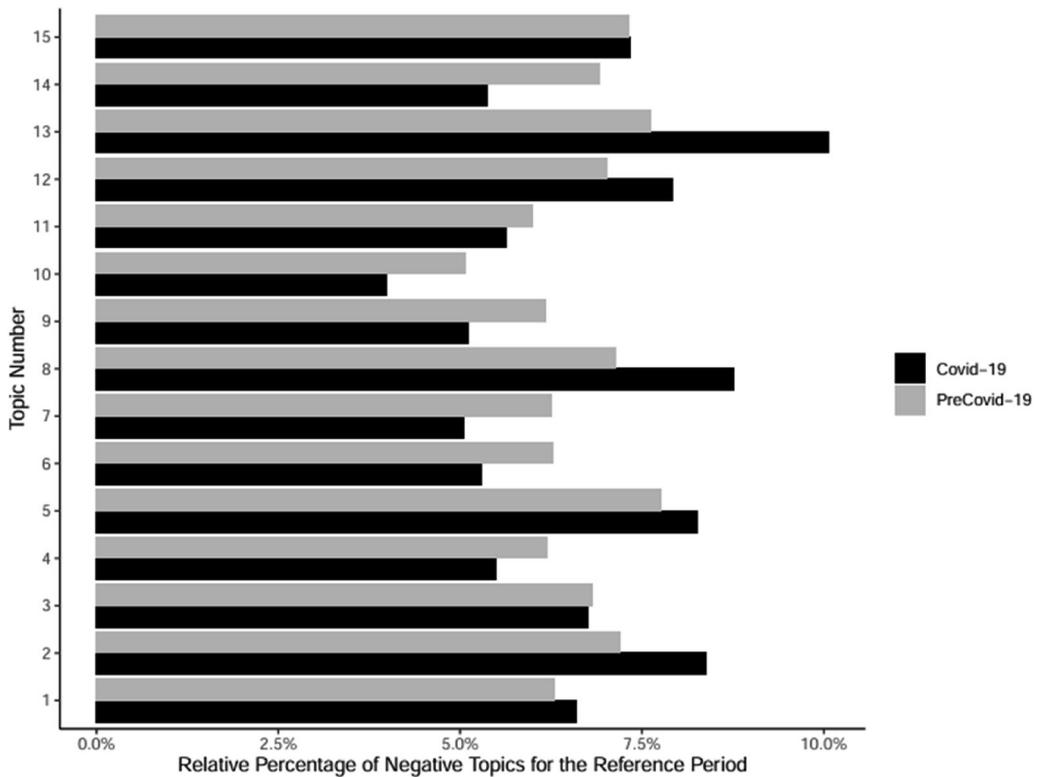


Figure 6. Negative Topic Relative Percentage to Overall Reviews During and Pre-Pandemic.

of travel and tourism stakeholders (Sigala, 2021) and the limited attention to tourism employee well-being while recent work examined the impact of COVID-19-induced redundancy on the well-being of redundant travel and tourism employees (Kimbu et al., 2021).

In interpreting this important re-direction, it is argued that tourism and hospitality employees prioritize well-being due to the well-documented dual stressors related to redundancies and infection concerns (Chen et al., 2022) and the career insecurity stemming from pandemics (Chen & Chen, 2021). Conversely, latent themes related to dissatisfaction were predominantly focused on work and organizational activities. In addition, the most important contributors to negative reviews were associated with the work environment, management, and compensation which corroborate our previous point. In high-contact services, employee-customer interaction is the cornerstone of firm-level outcomes (e.g. Stamolampros et al., 2020), as employee perceptions shape and formulate the experiential nature of service consumption. These assertions stress the importance of the hospitality employee role and its centrality in crisis management and the protection of organizational interests (Bichler et al., 2022).

6. Conclusions, managerial recommendations and limitations

The paper contributes to our understanding of employee satisfaction in high contact services by empirically depicting the effects of the COVID-19 pandemic on tourism and hospitality employees. By identifying latent topics and examining topic relevance to overall positive reviews in the pre-COVID-19 period and comparing these to data collected during the pandemic we extend current literature and empirically depict the dynamic nature of employee satisfaction.

The paper suggests latent factors that are more likely linked to higher dissatisfaction/satisfaction in a post-pandemic working environment. In addition, our findings could provide management with

evidence-based strategies that promote employee satisfaction and mitigate the impact of conditions that may even underpin 'quiet quitting'. Many organizational activities were discussed as negative contributors to employee satisfaction (e.g. topics related to the work environment, expectations, and schedule). For leadership, building a positive work environment represents the point of departure for rectifying these employee concerns, and responding to the changing nature of the labour dynamics in these industries. This results in prescriptions for leadership to proactively promote *professional identification* through developing a facilitating culture for advancement. In addition, topic modelling suggests that employees value *flexible work arrangements*, which may be beneficial in adopting to drastic changes at the industry level, in line with corroborating evidence confirming these assertions (e.g. Huang et al., 2021). Such imperative conditions have been made abundantly clear in the latent themes unmasked in employee user-generated content and point towards intrinsic preferences of work experience as key determinant.

While the study explored a novel approach in understanding changes in employee satisfaction and dissatisfaction before and during the pandemic, some limitations can be identified due to the use of online reviews. While online reviews offer advantages in terms of the population of participants as well as the representations of thousands of companies in our sample, which will be very difficult to achieve with survey data, at the same time, the predefined scales found in employee online review platform fail to directly measure constructs such as job stress, role ambiguity, role conflict or role overload. Another limitation inherent to the nature of online reviews is the existence of several bias (Hu et al., 2017; Li & Hitt, 2008) or the probability of online reviews manipulation (Mayzlin et al., 2014). To some extent, our empirical design addressed such biases. First, the textual analysis allowed us to reveal constructs that are not directly measured in the Glassdoor predefined scales. Therefore, we identified topics such as working environment, good interaction with colleagues and customers but also work flexibility. Second, a central part of the analysis of this study is based on the comparison between the two periods, and this should cancel out any effect coming from review manipulation coming from a limited number of companies (if any) as there are no reasons to believe that there should be a systematic difference to the number of companies that will resort to such strategies between the two periods. Additionally, as discussed in previous studies that utilize online employee reviews, the distribution of online employee reviews does not seem to follow the u-shaped bias found in online customer reviews, and it seems that the mechanism in place and the *quid pro quo* model, which is used in those platforms alleviate distribution biases leading to a more balanced representation (Marinescu et al., 2018; Stamolampros et al., 2020).

Notes

1. We would like to thank Glassdoor for providing the data for our research.
2. Graphical representation of the topic selection criteria as well as the beta probabilities of the words found in each topic, can be seen in the accompanied online appendix.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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