Job Satisfaction and Employee Turnover Determinants in High Contact Services: Insights from Employees' Online Reviews

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Abstract

We explore the key determinants of job satisfaction and employee turnover in high contact services studying employees' electronic word of mouth expressed through online reviews. We analyze a novel dataset of 297,933 employee online reviews for 11,975 US tourism and hospitality firms, taking advantage of both review valence and text. Our results exhibit that firms with high scores in leadership and cultural values yield higher employee satisfaction. Moreover, we show that career progression is a critical factor of employee turnover, with a unit increase in the career progression rating being accompanied with 14.87% reduction in the likelihood of an employee to leave the company. Most importantly, we quantify the effect of job satisfaction on firm profitability. In particular, an increase in job satisfaction by one unit is associated with an increase in Return on Assets between 1.2% and 1.4%. This finding is extremely important since we do not find evidence supporting the reverse relationship, that profitable firms increase employee's satisfaction. Overall, our empirical analysis indicates that the feedback to management provided through online employee reviews holds information value which can be enacted with specific managerial implications.

Keywords: Employee eWOM, Employee Turnover, Employee Satisfaction, Latent Dirichlet Allocation

1. Introduction

Skill shortage and high employee turnover intention for tourism and hospitality employees are important challenges in this sector (Marchante, Ortega, & Pagán, 2006). In the US specifically, the Federal Bureau of Labor Statistics reports that the annual quits rate for tourism and hospitality employees is persistently the highest among all sectors, close to or even exceeding 50%[2]. David Scowsill, former President and CEO of World Travel & Tourism Council, highlighted the problem stating that "…*When I speak to the leaders of the world's Travel and Tourism companies, it is clear that the biggest challenge to their growth plans is the supply and retention of talent across all levels of their businesses...*" [3]. This problem is of high economic significance for firms due to the costs associated with severance, training, and replacement, as well as the differential cost between the performance of the leavers and the newcomers (Cascio, 1991). While exact figures are not disclosed, academic research calculates that cost between 90% to 200% of the annual salary (Allen, Bryant, & Vardaman, 2010).

Job satisfaction is a critical factor in attracting and retaining a skilled workforce. The extant scholarly thought substantiates a positive relationship among employee satisfaction, customer satisfaction, and corporate performance (Harter, Schmidt, & Hayes, 2002; Huang, Li, Meschke, & Guthrie, 2015; Symitsi, Stamolampros, & Daskalakis, 2018). This link is stronger in *high-contact* service industries that require a substantial level of contact between the service provider and the customer (Yee, Yeung, & Cheng, 2008). This is mainly attributed to the moderating effect of the customer-employee interaction during the consumption experience (see Brown & Lam, 2008 for a review and meta-analysis). Tourism and hospitality

[2] Bureau of Labour Statistics (2018). Annual quits rates by Industry. US Department of Labor. Available at: https://www.bls.gov/news.release/jolts.t18.htm

[3] WTC Press Release (2015): 14 million jobs at risk due to global Travel & Tourism talent shortage Available at: https://sp.wttc.org/about/media-centre/press-releases/press-releases/2015/14-million-jobs-at-risk-due-to-global-travel-tourism-talent-shortage/

is a high-contact service sector, where most of the services are delivered with a high level of interaction between customers and employees (Kong, Jiang, Chan, & Zhou, 2018). Employees with a low level of satisfaction have less incentive to excel and, as such, may deliver lower service quality (McPhail, Patiar, Herington, Creed, & Davidson, 2015), affecting in turn corporate performance through the service satisfaction-profitability link (Lam, Baum, & Pine, 2003). The literature embraces this view and a significant stream of studies evaluate the determinants of employee satisfaction and its effect on firms' operating and financial performance (Chi & Gursoy, 2009a; Huang & Rundle-Thiele, 2014; Lam, Zhang, & Baum, 2001; Spinelli & Canavos, 2000). While most of these studies rely on the collection of primary data, mainly from employee satisfaction surveys, issues such as sampling and attenuation bias become pertinent to the external validity of their findings. To this end, the advent of platforms that enable employees to evaluate their current or previous employers by posting online reviews offers unprecedented opportunities for the investigation of job satisfaction drivers, both in sector and firm-specific contexts.

Hitherto, online reviews have been extensively explored by scholars in other areas of tourism and hospitality research, mainly under the prism of consumer evaluations in a post-transactional context (Gao, Li, Liu, & Fang, 2018; Guo, Barnes, & Jia, 2017; Sparks, So, & Bradley, 2016). By considering this unexplored informational cue, which arrives directly from current and former employees, this study provides new evidence about the facets and dynamics of job determinants, as well as, their association with corporate profitability. We are doing that analyzing a dataset of 297,933 employee review ratings and their corresponding textual justifications for 11,975 US tourism and hospitality firms for the period 2008-2017 provided by Glassdoor Inc., one of US's most popular online platform for job recruiting and employee reviews.

This paper contributes to existing literature as the first study that uses online employee reviews to explore job satisfaction determinants in the context of high-contact services. Compared to existing literature that examines job satisfaction drivers in isolation, our approach is to capture the overall effect of multiple factors measured either directly through numerical scales or extracted indirectly from the text that often accompanies review ratings, and find their relative importance in explaining employee satisfaction variation. By incorporating the opinions of former employees, this study also attempts to shed light on the rather unexplored determinants of employee turnover. As mentioned previously, in addition to skill deficiencies, high turnover is an essential topic for the tourism and hospitality sector (Zopiatis, Constanti, & Theocharous, 2014). A significant departure of our study is that, instead of focusing on particular industries or employee roles, we derive more general insights based on a large volume of participants which are representative of all tourism and hospitality industries and different employment roles. Finally, this paper revisits the link between employee satisfaction and firm profitability and quantifies the effect per satisfaction unit increase on Return-on-Assets (ROA) for tourism and hospitality firms, providing further evidence on the directionality of this relationship.

The aim of this study is to present the information value of employee online reviews and the complementary benefits they offer for academic research and managerial practice alongside primary data from employee satisfaction surveys. In the extant tourism and hospitality literature, measurement scales such as the Minnesota Satisfaction Questionnaire (MSQ) and the Job Descriptive Index (JDI) have been extensively utilized. Questionnaires can be designed to allow a more systematic investigation of specific dimensions than online reviews, which have a broader structure. However, an approach exhausted to specific dimensions poses constraints as employee satisfaction or other relevant outcomes are multidimensional constructs (Matzler & Renzl, 2007) affected by a plethora of factors beyond

the measurement scales (Stamolampros, Korfiatis, Chalvatzis, & Bouhalis, 2019). As such, latent factors that affect employee satisfaction or relevant outcomes that are not contained within survey instruments will remain unnoticed and their effects unexplored rending the interpretation of the results problematic (Jung et al., 2009).

Online reviews bring many complementarities to these survey-based metrics for researchers and practitioners. The limitations imposed to online reviews by a general closed-end structure are moderated through the unstructured review text voluntarily and anonymously provided by employees. The review text allows employees to reflect on their work experience with a company, without being constrained by predefined items unveiling up-to-date preferences as reviewers discuss their current experience with specific employers and argue based on factors beyond the established closed-form questions. Under the reasonable assumption that employees comment on the most critical drivers of their satisfaction (or dissatisfaction) with an employer, a proper methodology will identify those factors within the review text. In that area, text mining methods have been shown to capture latent dimensions that are not explicitly mentioned or measured by scales but significantly affect reviewers' opinion formulation (see, for example, Korfiatis, Stamolampros, Kourouthanassis, & Sagiadinos, 2019; Tirunillai & Tellis, 2014, among others). In addition to identifying up-to-date conditions, review text can offer further benefits by revealing sector-related factors of employee satisfaction. As a result, online reviews mitigate concerns when psychometric measures are adopted from different sectors in the spirit of *"one size fits all"* without being appropriately adjusted to capture current and specific industry conditions (Hom, Lee, Shaw, & Hausknecht, 2017). Finally, the large volume of participating employees reviewing their employers allows for more representative samples and comparative benchmarking between companies and sectors/industries.

In addition to studying job satisfaction determinants, the focus of this paper extends to employee turnover, motivated by the substantially high quits rates and the costly consequences in tourism and hospitality industries. In employee turnover research, even the most extensive models fail to incorporate important constructs; therefore their empirical estimation is problematic and the explained variation in employee turnover behavior is low (Maertz Jr & Griffeth, 2004). There is also difficulty in finding data for the work experience of previous employees and those factors that led to a "leave the company" decision. Online reviews resolve this issue offering access to a large pool of opinions expressed by former employees allowing us to investigate employee turnover determinants through actual departures from a post (actions) and not through the intention to leave (scenarios) as is the case in most studies.

In terms of managerial practice, online reviews can complement the information derived through internal mechanisms. Information about employee satisfaction, motivation or engagement delivered through internal surveys and systems arrives in lower frequency time intervals, usually collected once a year (Lee, Hom, Eberly, Li, & Mitchell, 2017). This approach ignores any seasonal dynamics and may be influenced by specific events that occur during the data collection period. Shocks in the variables of interest (for example sudden decreases in employee satisfaction) will also be captured with a delay. Most importantly, information from internal procedures is likely to be biased as employees may be reluctant to speak the truth and share information eponymously and the fear of retribution may undermine participation in such initiatives leading to employee silence (Milliken, Morrison, & Hewlin, 2003). The anonymity of online reviews enables employees to overcome such hesitations and discuss openly more issues (for example managerial behaviour). This suffers from limitations in the case of very small firms where, perhaps, it could be possible for a firm to identify the author of a review post. Furthermore, whereas the collection of primary data is a costly process in terms of the resources and time required, online reviews are readily available through review

aggregators. Therefore, firms can easily, timely, and cheaply have a depiction of the current employee opinions. In addition to gaining within-firm insights, managers can enjoy further benefits from freely available reviews for thousands of companies. For instance, managers could identify success factors within the sector or map the competition and benchmark their performance with that of their competitors.

Our approach considers both the numerical ratings for specific job elements and the provided textual justification. We are doing that introducing a machine learning approach to explore the effect of textual features extracted from hospitality employee reviews. Using a particular class of topic models, i.e., the Structural Topic Model – STM (Roberts, Stewart, & Airoldi, 2016), we evaluate the impact of these features on the overall satisfaction and employee turnover. To this end, this paper is structured as follows: Section (2) reviews the related literature and outlines the contribution; Section (3) describes the methodology and variables used and presents the empirical results of the regression analysis; Section (4) provides the framework for the textual analysis and the empirical results of this method; Section (5) explores the effect of job satisfaction on firm performance; Section (6) discusses the theoretical and managerial implications of the study; and Section (7) concludes with a discussion of the limitations and the future research avenues of the current research.

2. Related Work

Online reviews occupy a central position in the literature due to the influence they exert on consumers' purchase decisions with regards to tangible products, as well as, services such as hotel room bookings (Viglia, Minazzi, & Buhalis, 2016). A significant number of studies examine online reviews from different perspectives, such as their effect on consumer expectations (Narangajavana, Fiol, Tena, Artola, & García, 2017), customer satisfaction determinants (Guo et al., 2017), psychological influences (Stamolampros & Korfiatis, 2018), and firm responses (Sparks et al., 2016). Although electronic word-of-mouth research is

abundant, it is solely examined through the lens of product/service evaluation of a consumption experience shared online by consumers.

Employee review platforms that allow users to share their opinions about their current and previous employers form a novel case of electronic word of mouth. Job listing sites, such as Glassdoor and Indeed, act as a valuable tool for job-seekers, particularly when they lack internal connections to gain knowledge about the work conditions within a company (Ladkin & Buhalis, 2016). In doing so, job-seekers access information about the benefits, culture, managerial practices, and several other specific job elements of the company of interest, either through the provided numerical ratings or the review text. Online platforms and social media have been shown to affect recruitment in hospitality organizations (Ladkin & Buhalis, 2016), though, their effect is not exhausted to recruiting processes. Online employee reviews provide new opportunities for the study of employee satisfaction and performance in the context of tourism and hospitality literature, however, until now this informational cue has remained unexplored.

In particular, in high-contact services, employee satisfaction plays a vital role in the formation of customer experience, while it also has a significant effect on firm profitability (Yee et al., 2008). The service-profit chain model (Heskett et al., 1994) describes the mechanisms that govern this relationship. Better satisfied employees offer higher service quality to customers, leading to improved customer satisfaction and establishing customer loyalty. In turn, loyalty further stimulates firm profitability and growth.

Not surprisingly, the extant literature dedicates significant effort on tourism labor research, as a high-contact services industry (Baum, Kralj, Robinson, & Solnet, 2016; Janta, Ladkin, Brown, & Lugosi, 2011; Ladkin, 2011). Scholars try to understand the determinants of employee satisfaction and measure its effect both on customer satisfaction and corporate

profitability. This is particularly important, as the continuous "*exodus*" of staff (in terms of annual job quits) in this sector is a major problem. Other studies document positive associations between employee and customer satisfaction (Spinelli & Canavos, 2000) and between satisfied employees and financial performance (Chi & Gursoy, 2009).

2.1 Understanding the Employment Characteristics in Tourism and Hospitality

Tourism and hospitality workforce belongs to the pool of "*peripheral labor*" which is primarily composed of semi-skilled or unskilled workers in full-time, part-time or short-term contracts (Krakover, 2000). The pertinent nature of tourism and hospitality jobs has also made them particularly attractive to employees of a certain demographic profile. Ladkin and Buhalis (2016) note that the sector often relies on the input of young and inexperienced labour for filling up vacancies as more skilled and experienced employees find employment in other industries. In several economies around the world, the sector's workforce has traditionally been much younger than across the economy as a whole (ILO, 2010). This lack in experience is not filled by educational programs which fail to equip employees with the actual skills expected from them to perform on their roles and do not meet the changing needs of the industry (Chi & Gursoy, 2009b). In addition to poor training, the industry has been also characterized with poor salaries which work as an disincentive for employees required to satisfy the demands of customers who pay to be served, obeyed, and entertained (Poulston, 2008).

Various stressors such as excessively demanding customers and supervisors, alongside the repetitive nature of duties, inefficient training and long-lasting shifts establish a unique context of work conditions in this sector (Law, Pearce, & Woods, 1995; Tepeci & Bartlett, 2002). Employment flexibility for family reasons such as short time off or paid (non-paid) leave, which are often considered as standard in other sectors, are not the norm for hospitality employees whose performance, to some extent, is evaluated by the long and unsocial hours spent at work (Zhao & Ghiselli, 2016). This has made tourism and hospitality jobs to be widely

regarded as stressful with considerable imbalance between employees' work and personal life commitments (O'Neill & Xiao, 2010). On that aspect, past research has highlighted the vulnerability of hospitality workers to adverse outcomes such as stress, burnout, "emotional injury", violence and physical injuries (McNamara, Bohle, & Quinlan, 2011).

Frontline employees, such as those in hotels and restaurants, are often treated poorly, not just by managers, but also by customers deriving from their high expectations for the service provider (Poulston, 2009). The primary philosophy in high contact service industries that "*the customer is always right*", results in an unequal power between frontline employees and customers and requires employees to serve customers in a friendly and polite manner even in the event of customer verbal aggression and harassment and encourages "pleasing the customer" at any cost. The later has also detrimental effects on employee satisfaction (Karatepe, Yorganci, & Haktanir, 2009). These effects are magnified when customers anticipate extremely high quality services from employees in tourism and hospitality industries and, particularly, when high expectations frame special occasions (e.g., family vacations, delivery of important business events, family occasions). Under these conditions, there exists relatively significant intolerance to service failures (e.g., departure delays, sub-standard delivery of upfront paid services). Not surprisingly, managers coming face-to-face with dissatisfied customers generate extra pressure for hospitality and tourism employees, particularly when they have to sacrifice economic gain in order to compensate customers in the form of future discounts or refunds (Harris & Reynolds, 2004).

Altogether, these characteristics in tourism and hospitality posts induce a higher level of employee dissatisfaction compared to other industries with surveys reporting that more than

half of the workforce in the sector is unhappy and considers a move[4]. Out of these demographic characteristics, the young age, which is described by a higher penetration rate to technology and social media, increases the propensity that employees will resort to online employee platforms to disclose their experience. As such, we argue that online employee reviews can be particularly informative for researchers and practitioners to better understand the drivers of employee satisfaction and turnover in hospitality and tourism. Moreover, it is expected that the information content of these reviews will reflect the contextual characteristics discussed above.

2.2 Drivers of employee satisfaction in tourism and hospitality

Extant research in this area examines the relationships among several individual, social and family, work-related, and organizational factors on job satisfaction or similar outcomes. These outcomes are outlined below.

Organizational Factors: Several organizational aspects influence job satisfaction for employees in the tourism and hospitality industry. Nadiri and Tanova (2010) report that organizational justice, i.e., the individual perception of fairness received from an organization, is positively related to job satisfaction. Organizational support is also found to be positively related to job satisfaction. For example, Kim, Leong, and Lee (2005) found that restaurant employees are more satisfied when they receive service training and greater encouragement from management as well as when organizational procedures for optimal service are in place. Sparrowe (1994) reported that employee empowerment and the relationship employees have with their immediate supervisors (high leader-member exchange) influence positively some facets of job satisfaction and more specifically promotion satisfaction for the former factor and

[4] Investors in People (2018). Job Exodus Trends: 2017 Employee Sentiment Poll. Available at: https://www.investorsinpeople.com/wp-content/uploads/2018/07/IIP-Job-Exodus-Trends-2017-employee-sentiment-poll.pdf

pay satisfaction for the latter. Organizational culture, especially culture that is team-oriented, enhance innovation, employee development, and value customers lead to higher job satisfaction, especially in the case of high perceived person-organization fit (Tepeci & Bartlett, 2002).

Employees also have an increased level of job satisfaction when they work for companies that display corporate social responsibility. In the case of casino employees, Lee, Song, Lee, Lee, and Bernhard (2013) found that legal CSR and supplementary Responsible Gambling (RG) policies have a positive effect on organizational trust, which in turn influences job satisfaction positively. Other organizational factors that explain job satisfaction are training (Lam et al., 2001); work engagement (Yeh, 2013); organizational structure (Øgaard, Marnburg, & Larsen, 2008); role clarity (Li & Tse, 1998); compensation (Ineson, Benke, & László, 2013); career prospects (McPhail et al., 2015); and internal market orientation (Ruizalba, Bermúdez-González, Rodríguez-Molina, & Blanca, 2014).

Social and Family Characteristics: A parallel body of literature points out to several social and family factors that affect the perceived job satisfaction of tourism and hospitality employees. A significant stream of studies investigates the role of work-family conflicts. For example, Namasivayam and Zhao (2007) provided evidence that work-family conflicts (and mainly the direction where *family-related* roles interfered with *work-related* roles) are negatively related to job satisfaction. Similarly, Karatepe and Kilic (2007) found that there is a negative relationship to job satisfaction when job interferes with family roles and as a result employees cannot be involved in important family and social activities. The authors, however, reported the positive effect of a supportive supervisor in work and family problems on employee job satisfaction. Extant literature also sheds light to the interaction with other social groups such as colleagues and friends. Bufquin, DiPietro, Orlowski, and Partlow (2017) revealed that employees are more likely to experience higher job satisfaction when they

perceive their co-workers as warm and competent individuals. Yang (2010) found that employee socialization contributed significantly to the prediction of job satisfaction for frontline employee in hotels in Taiwan. Song, Chon, Ding, and Gu (2015) confirmed this effect, showing that hotel employee job satisfaction for newcomers is positively affected by organizational socialization tactics (OST).

Individual characteristics: Several individual characteristics have direct or moderating effects on job satisfaction. Karatepe and Sokmen (2006) reported a positive impact of education and a negative relationship of age on job satisfaction. Additionally, the authors reported the positive effect of organizational tenure, self-efficacy, and effort (frontline employees spending a significant amount of energy in a series of job-related duties). Kim, Murrmann, & Lee (2009) found that gender and organizational levels (supervisory and non-supervisory roles) have a moderating effect on the impact of role stress on job satisfaction, which is significantly stronger for female employees and supervisory roles than male employees and non-supervisory roles. Generational differences between Baby Boomers and Millennials moderate the effects on the relationship between emotional exhaustion and job satisfaction (Lu & Gursoy, 2016), with emotionally exhausted Millennials reporting significantly lower job satisfaction levels and higher employee turnover intention than emotionally exhausted Baby Boomers.

Work-Related Characteristics: This group of factors examines characteristics such as the content of the job and the employment characteristics. Role conflict (when incompatible roles are performed) and role ambiguity (when employees are uncertain about the expectations within a certain role) have a significant negative impact on job satisfaction (Karatepe & Sokmen, 2006). Yang (2010) identified an adverse effect of role conflict on job satisfaction. Job content has a substantial negative impact on overall satisfaction when satisfaction in this aspect is low but no impact when satisfaction is high (Matzler & Renzl, 2007). On the other hand, job polychronicity is positively linked to job satisfaction (Jang & George, 2012).

Similarly, job roles that require higher emotive effort increase job satisfaction (Chu, Baker, & Murrmann, 2012), while the same effect is reported for relational and cognitive job crafting (Kim, Im, & Qu, 2018). Moreover, job characteristics can moderate the effect of other factors, as in the study of Lee, Kim, and Perdue (2016), who reported a positive effect of empowerment on employee satisfaction, with higher effect on customer-facing than non-customer facing employees.

2.3 Outline of contribution

As discussed in the previous section, the mainstream approach followed in the literature is to establish a relationship between a specific or a number of factors with job satisfaction and other relevant outcomes, without controlling for other factors that have been found to explain the satisfaction levels of employees with their employers. To this end, one of the most significant shortcomings of existing quantitative research is the selection of the measurements that will be operationalized in the research. Aspects that are not contained within survey instruments are not measured and as such remain unnoticed and their effects unexplored, rendering the interpretation of the results problematic (Jung et al., 2009). Of course, there are some exceptions, such as the work of Pan (2015), who performed an importance-performance analysis for six factors "*Evaluation & Promotion*"; "*Compensation and Fringe Benefits*"; "*Job Content*"; "*Work Environment*"; "*Supervising and Leading*"; "*Interpersonal Relationships*"; and overall satisfaction. However, even those studies are based on predefined constructs that may not fully capture the multidimensionality of employee satisfaction (Matzler & Renzl, 2007) and feature the limitations discussed previously. In the present study, a different approach is followed, as the goal is not to establish a relationship between a specific factor and job satisfaction but instead to assess the relative importance of all factors captured through the review rating and text.

A second aspect that is strikingly common in extant research is that researchers utilize primary data sourced from employee responses in cross-sectional questionnaires. Thus, information that employees (former and current) share online remains unexplored. Data collection for previous employees is always a difficult task for researchers and practitioners. By collaborating with firms, researchers have access mainly to the pool of current employees and as such panel-based longitudinal studies are needed. Indeed, there is a link between the perceptions of current employees about their company and employee turnover performance. However, current employees may be more hesitant to speak out, reveal their true satisfaction, and raise issues with an employer, while there is also a distinct line between them and former employees, which resides on the decision of the latter to leave the company. In this study, we do not gauge employee turnover intention but actual employee departures from a job. Previous studies have shown that these two should be considered as distinct concepts that are predicted by different sets of variables (Cohen, Blake, & Goodman, 2016).

Finally, extant literature is usually context-specific and does not explore the tourism and hospitality industry as a whole. For example, in Table 1 we summarise the context of the studies that study employee satisfaction directly or indirectly. It is clear that most of the studies are sector-specific and firm-specific (usually taking into consideration employees from a few hotels), role-specific (frontline employees, travel agent employees, chefs, etc.) and the analysis is based on a limited number of questionnaires. However, it is known that employment characteristics regulate the relationship between job satisfaction factors and overall job satisfaction, with employees that work in different domains reporting different factors as more important (Lee & Way, 2010). As such, the generalization of the results from context-specific studies is problematic, and consequently, the extant literature may fail to answer which factors capture employee satisfaction for the whole industry.

Considering the above research gaps, this study aims to answer the following research questions: (a) *Which factors drive employee satisfaction for tourism and hospitality firms?* Considering that numerical ratings can also be decomposed into specific aspects, which are the most influential aspects? (b) *Which factors can be significant predictors of actual employee turnover?* Likewise, this study evaluates which aspects of the overall rating predict employee turnover. In addition, and considering the textual justification of the employee reviews, this study answers *(c) what other factors (not captured by the rating interface) are revealed from the text as important drivers of employee satisfaction*? How does the prevalence of these themes change across the continuum of the rating scale, and employment status (former vs. current)? Finally, *(d) how does employee satisfaction (captured through ratings) affect the performance of a tourism and hospitality firm?* Considering the economic significance of this question, there are managerial implications that are also pertinent to this analysis, such as what can travel and hospitality firms do to address this issue.

Table 1: Indicative sample sizes and firm contexts reported in the literature.

Study	Context	Sample Size
Pan (2015)	Employees of a specific hotel	474 questionnaires
Karatepe and Sokmen (2006)	Frontline employees of 37 3,4,5* hotels in Ankara, Turkey	723 questionnaires
Matzler and Renzl (2007)	Employees of Austrian Hotels	752 questionnaires
Namasivayam and Zhao (2007)	Employees of a large hotel in India	93 questionnaires
Øgaard et al. (2008)	Employees of 54 hotels	734 questionnaires
Robinson and Beesley (2010)	Chefs or cooks from clubs in southeast Queensland	196 questionnaires
Larsen et al. (2012)	Employees of cruise crew	216 questionnaires
Alexander et al. (2012)	Full-time employed chefs across Scotland	164 questionnaires
Belhassen and Shani (2013)	Employees of 3 hotels in Eilat, Israel	473 questionnaires
Lin et al. (2013)	Frontline employees of various tourism and hospitality industries	587 questionnaires
Zopiatis et al. (2014)	Employees of 3,4,5* hotels in Cyprus	482 questionnaires
Huang and Rundle-Thiele (2014)	Australian and Taiwanese hospitality employees in Australia	458 questionnaires
Díaz et al. (2015)	Travel agent employees in Spain	497 questionnaires
Elbaz and Haddoud (2017)	Travel agent employees in Egypt	505 questionnaires
Youn et al. (2018)	Employees of a casino company in Seoul	206 questionnaires

Tsaur and Yen (2018)	Employees from several tourism and hospitality industries in Taiwan	363 questionnaires
This study	Employees of 11,975 US tourism and hospitality firms from all industries.	297,933 online reviews

3. Data, Methods, and Results

3.1 Dataset Description

Glassdoor – the second most popular jobs listing website in the US with 50 million unique users[5] made available to the authors all employee reviews submitted to the platform for the period between 2008 and 2017. These reviews included both publicly available data as well as other variables, such as job and company classification codes used to source reviews of travel and hospitality employees. As such, no web crawling was used to collect the dataset, and full compliance with the terms of use was obtained under Glassdoor's permission. Glassdoor accommodates a platform where employees share their experiences with current and previous employers, providing ratings about their overall satisfaction with a company as well as for specific job elements. In addition to their overall satisfaction, employees evaluate career opportunities, compensations and benefits, senior leadership, work-life balance, and cultural values of the company. Glassdoor has a particular process in place to safeguard the content and quality of each employee rating from manipulation, and every review that is submitted to the review system is vetted with a variety of methods, employing both automated procedures and curation by human inspectors.

Glassdoor collects information about employee's tenure (*Current* vs. *Former*) as well as demographics. It offers company-specific information in the form of industry/sector, stock

[5] Yahoo Finane (2018): *How Glassdoor became the No. 2 jobs site in the US* (https://finance.yahoo.com/news/glassdoor-became-no-2-jobs-site-us-222246364.html)

ticker (which allows distinguishing between private and public companies), number of employees, and annual revenue. For the review text, Glassdoor asks users to provide separate responses for the positive and negative aspects of their work experience, as well as feedback to management. This text categorization, enforced by Glassdoor's user interface, provides a distinct advantage for analyzing the textual parts of an employee review as no sentiment detection method is needed.

Table 2: Sample characteristics

Reviewer Characteristics	
Total Number of Reviews	297,933
- *Former employees*	161,494
- *Current Employees*	136,439
Female Employees	95,206
Male Employees	86,695
Education High School	18,384
Education Bachelor	79,054
Education Postgrad (MSc/MBA/ Ph.D.)	7,123
Average Reviewer Age	32.7
Employer Characteristics	
Total Number of Employers	11,975
Average Number of Employees	1,446.3
Average Annual Revenue ($ millions)	4,324

Table 2 provides a depiction of the dataset used in this study. A total of 297,933 employee reviews from 11,975 US firms formed our dataset, with the well-balanced participation of former (161,494) and current employees (136,439). The sample almost equally represents female (52%) and male (48%) employees, while the average age reported is 32.7 years. The companies in our sample have on average 1,446 employees and annual revenues of $4.324 million. A breakdown of the sample and the mean overall rating (and standard deviation) per industry is provided in Appendix Table B. We used Glassdoor's internal categorization to select two sectors of interest for this study: (a) restaurants, bars and food services; and (b) travel and tourism; which, as seen in Appendix Table B, contain five and ten industries respectively. The rating provided by previous employees is lower than that of current

employees (Figure 1). However, it is important to note that the rating distribution does not follow the expected U-shaped (or J- shaped) curve that is prevalent on other review aggregators (Hu, Zhang, & Pavlou, 2009) but, especially in the case of former employees, it is closer to a normal distribution. This suggests that the dataset is not affected by the self-selection bias (Li & Hitt, 2008), induced by the participation of only the overly satisfied (or dissatisfied) employees.

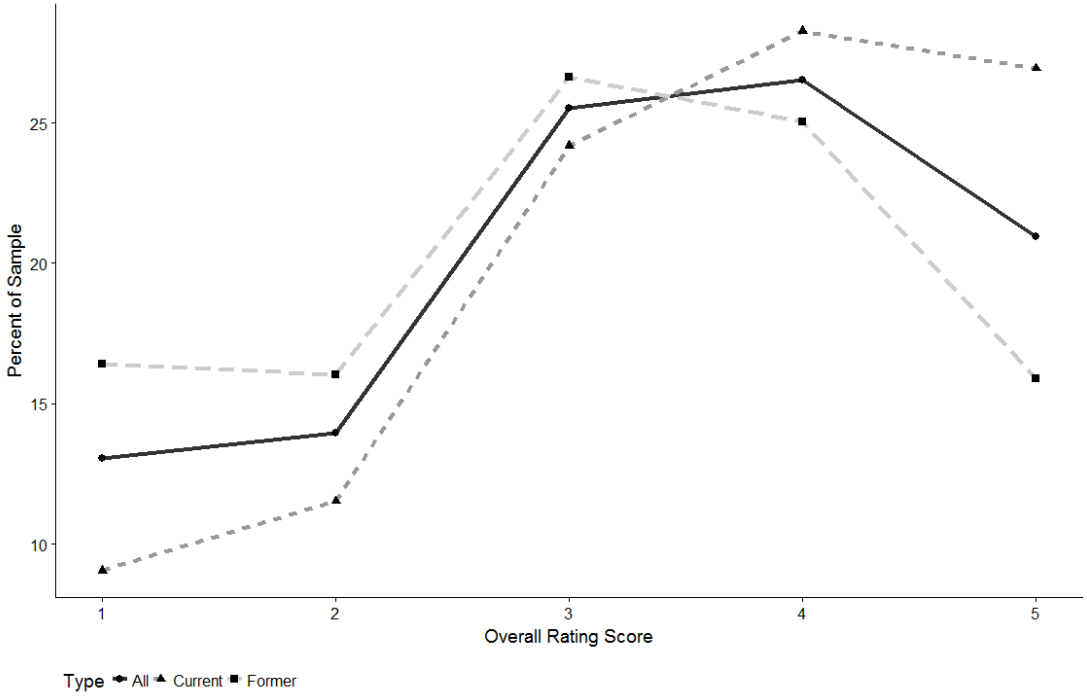

Figure 1: Distribution of star rating (overall rating) by employment relation (type).

3.2 Results

What Drives Overall Employee Satisfaction?

In the first part of the analysis, the overall satisfaction rating is decomposed to the job attributes measured on the platform in order to understand which factors are valued more by employees. Four different econometric specifications were evaluated (Table 2), with a baseline representing a regression of the overall satisfaction with the five rating subcategories previously described in the sample of all employees. As the dependent variable is an ordinal

variable that takes values from 1 to 5 stars (with five denoting the highest satisfaction), following previous studies (Gao et al., 2018; Sridhar & Srinivasan, 2012), we use an ordered logistic regression specification. Let S_{ij}^{*} be the underlying latent variable which captures the employee's i evaluation for firm j; S_{ij} the observed rating scores that take values $k \in [1,5]$; and $\mu_2 - \mu_5$ the cutoffs for the levels of the latent variable. The main model, controlling for employee (reviewer) and firm characteristics, has the following form:

$$\Pr(S_{ij} = k) = \Pr(\mu_{k-1} < S_{ij}^{*} \leq \mu_k), k \in [1,5] \quad (1)$$

$$S_{ij}^{*} = \beta X_{ij} + \gamma Z_i + \delta W_j + \epsilon_{ij} \quad (2)$$

where, X_{ij} are the rating scores the reviewer i provides for the five specific rating aspects; Z_i is a vector of reviewer demographics that includes age, sex, and level of education (an ordered categorical variable with three levels, namely high school, bachelor degree, and postgraduate); and W_j contains the firm specific variables (number of employees, annual revenues, and a binary variable whether the firm is public or not). The model described above is applied for all reviews but also to subsamples that contain current-only and former-only employees.

Table 3 presents the results of the regression analysis for the baseline model (Model 1) as well as for the subsample for former (Model 2), current (Model 3), and with all employee and firm controls (Model 4). When it comes to the rating aspects, the lower coefficient is observed for compensation and benefits (ranging from 0.336 to 0.433 in all models, *p<0.001*) and work-life balance (0.452 to 0.489, *p<0.001*). On the other hand, the higher coefficients are observed for senior leadership (0.629 to 0.671, *p<0.001*) and cultural values (0.633 to 0.682, *p<0.001*). To ensure robustness of the results, we tested for multicollinearity between the five sub-scales, utilizing the variance inflation factor (VIF) approach, which did not show any concerns and the square root of all VIF scores in the baseline model was not higher than 2. Additionally, a dominance analysis is employed to measure the relative importance of the

explanatory variables using the LMG Metric (Lindeman, Merenda, & Gold, 1980). This analysis allows measuring the average importance of each factor in explaining the variation of overall satisfaction considering all possible variable combinations and the order of entering the model. Results are reported in Appendix C, and the order of the importance of the five factors point out in the same direction as the results reported in the baseline model.

Table 3: Results of the factors affecting the Overall Rating

	Model (1)	Model (2)	Model (3)	Model (4)
Rating Dimensions				
Career Opportunities	0.550***	0.490***	0.559***	0.528***
	(0.005)	(0.012)	(0.012)	(0.008)
Compensation and	0.346***	0.336***	0.433***	0.378***
Benefits	(0.004)	(0.011)	(0.012)	(0.008)
Senior Leadership	0.658***	0.671***	0.629***	0.657***
	(0.005)	(0.012)	(0.013)	(0.009)
Work/Life Balance	0.489***	0.452***	0.454***	0.453***
	(0.004)	(0.010)	(0.011)	(0.007)
Culture Values	0.665***	0.682***	0.633***	0.661***
	(0.005)	(0.012)	(0.013)	(0.009)
Employee Controls				
Gender (Male)		0.001	0.070**	0.040**
		(0.021)	(0.023)	(0.015)
Age		-0.0003	0.005***	0.002*
		(0.001)	(0.001)	(0.001)
Education (College)		0.094***	0.027	0.055**
		(0.028)	(0.029)	(0.020)
Education (Postgrad.)		0.087	0.054	0.056
		(0.048)	(0.053)	(0.035)
Employer Controls				
Listed		0.008	-0.017	-0.004
		(0.028)	(0.030)	(0.021)
(Log) Employees		0.005	-0.054***	-0.017**
		(0.009)	(0.009)	(0.006)
(Log) Revenues		-0.013	0.016	-0.001
		(0.008)	(0.008)	(0.006)
Mc Fadden R^2	0.52	0.86	0.85	0.86
AIC	450016	70938	60948	132187
Log Lik.	-224999	-35439	-30444	-66063
Observations	237,135	35,789	32,744	68,533
Sample Segment	Full Sample	Former Only	Current Only	Full Sample

Note: ** p<0.05; ** p<0.01; *** p<0.001. Model (1) is the model that employs only the five measurement scales captured in Glassdoor to the total sample. Models (2), (3) and (4) are with all control variables for the former only, current only, and to the total sample of employees, respectively.*

The interpretation of the results requires careful analysis, as they could lead to the fallacy that compensation/benefits and work-life balance are not essential drivers for employee satisfaction. A better explanation of the results is that compensation/benefits and work-life balance are basic needs of employees, where their lower level can increase dissatisfaction but their higher level by itself, will not lead to high satisfaction. Strong cultural values and leadership are the factors that present a significant increase in job satisfaction. In this sample, it is common to observe high compensation/benefits and work-life balance ratings coupled with average overall satisfaction ratings, while strong cultural values and leadership usually lead to high overall scores.

Focusing on demographics and firm characteristics, the analysis provides further insights into the way they affect overall satisfaction and the rating to specific job elements. Understanding the differences in the provided ratings among current and former employees, gender, different education background, age as well as private and public corporations, size, and profitability of the firms provides critical insights. As such, a similar econometric specification is utilized, where the depended variable is not only the overall rating but also the rating aspects to the specific job satisfaction elements. The explanatory variables contain two clusters of firm and reviewer characteristics as well as an additional binary variable that denotes whether the reviewer is a current or a former employee (with "*1*" assigned to former and "*0*" to current employees).

The results are presented in Table 4. The negative coefficient of former employees is quite intuitive and stable for all models (Model 1: β=*-0.625, p<0.001*). As expected, those employees who choose to leave a company are likely to be the most dissatisfied. When it comes to gender, in all job satisfaction aspects (except career opportunities which is statistically insignificant), male employees appear to be more satisfied than their female colleagues.

Table 4: Impact of employee status (former vs. current) on rating dimensions.

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Former Employee	-0.625***	-0.615***	-0.442***	-0.598***	-0.426***	-0.581***
	(0.012)	(0.013)	(0.013)	(0.013)	(0.013)	(0.014)
Employee Controls						
Gender (Male)	0.091***	-0.008	0.096***	0.120***	0.079***	0.081***
	(0.012)	(0.013)	(0.013)	(0.013)	(0.013)	(0.014)
Age	-0.008***	-0.003***	0.004***	-0.008***	-0.014***	-0.011***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Education (College)	0.225***	0.089***	0.169***	0.179***	0.195***	0.239***
	(0.016)	(0.017)	(0.017)	(0.017)	(0.017)	(0.018)
Education (Postgrad.)	0.289***	0.057	0.189***	0.275***	0.379***	0.299***
	(0.028)	(0.029)	(0.029)	(0.030)	(0.030)	(0.031)
Employer Controls						
Listed	0.062***	0.073***	0.130***	0.016	0.067***	0.108***
	(0.016)	(0.017)	(0.017)	(0.017)	(0.017)	(0.018)
(Log)Employees	-0.021***	0.036***	0.022***	-0.020***	-0.040***	-0.017**
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)
(Log) Revenues	0.030***	0.025***	0.034***	0.028***	0.021***	0.031***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Mc Fadden R^2	0.72	0.71	0.71	0.71	0.71	0.72
AIC	261,432	249,044	251,550	243,604	252,012	218,134
Log Lik.	-130,690	-124,492	-125,745	-121,772	-125,976	-109,041
Observations	85,091	75,557	75,374	74,211	75,640	70,250

Note: ** $p<0.05$; ** $p<0.01$; *** $p<0.001$. Response variable for Model (1): Overall rating, Model (2): Career Opportunities, Model (3): Compensation and Benefits, Model (4): Senior Leadership, Model (5): Work/Life Balance, and Model (6): Culture Values.*

Companies with higher revenue also tend to achieve higher employee satisfaction as the annual revenue is significantly positive for all models. Similarly, publicly listed companies also appear to have higher employee satisfaction than private companies. However, the coefficient representing the size of the company regarding employees provides mixed results. Although companies with many employees may offer better compensation benefits and career opportunities compared to smaller ones, they seem to lack in terms of cultural values, senior leadership, and work-life balance, which eventually leads to lower employee satisfaction. A higher level of employee education is linked to higher satisfaction, although this could be also the result of different job roles. Finally, employee age is linked to lower satisfaction except for the satisfaction with compensation and benefits. Some of the coefficients in Table 4 are not in

agreement with the previous model in Table 3, such as employee age or company status. However, including all measurement scales that explain a high level of the variation of the overall rating as well as not controlling for employee status may suppress the effect of the control variables presented in the following sections.

What Drives Employee Turnover in Travel and Hospitality Firms?

In the previous model, as well as in the initial descriptive analysis, a statistically significant difference was found on the rating provided by former and current employees. Investigating this further we look directly into the factors that lead to employee turnover. At this point, the focus is only on the provided numerical rating. The depended variable is a proxy of the decision of an employee to stay with or leave a company, as it is revealed by the time they provided the review. Therefore, a binary variable which takes the value of *"1"* if the reviewer is a former employee and *"0"* otherwise is considered. Controlling for all previously used employee and firm characteristics, the effect of the specific job elements to the decision of an employee to leave a company is examined. This is done in isolation, by studying the factors separately and also by examining their joint effect. Given the nature of this variable, a logistic regression model is considered appropriate for the analysis. As such, six models are estimated under the following specification:

$$Ln\left[\frac{P_i}{1-P_i}\right] = \alpha + \beta X_{ij} + \varepsilon \quad (3)$$

where *P* refers to the probability of the employee *I* to be a former employee at company *j*. X_{ij} is the matrix of independent variables, where on its full specification includes all the firm-specific, reviewer-specific variables, and rating scores used in the previous models, while, when examined in isolation, only the rating of the job element of interest is employed.

Table 5: Contribution of rating aspects to employee turnover. (Dependent variable: Status is former)

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Rating Dimensions						
Career Opportunities	-0.266*** (0.006)					-0.161*** (0.008)
Compensation and Benefits		-0.197*** (0.006)				-0.005 (0.008)
Senior Leadership			-0.242*** (0.005)			-0.107*** (0.009)
Work/Life Balance				-0.182*** (0.006)		-0.007 (0.007)
Culture Values					-0.232*** (0.005)	-0.061*** (0.009)
Employee Controls						
Gender (Male)	-0.180*** (0.015)	-0.168*** (0.015)	-0.159*** (0.015)	-0.170*** (0.015)	-0.164*** (0.015)	-0.160*** (0.016)
Age	0.003*** (0.001)	0.005*** (0.001)	0.003*** (0.001)	0.002** (0.001)	0.003*** (0.001)	0.003*** (0.001)
Education (College)	0.174*** (0.019)	0.177*** (0.019)	0.192*** (0.020)	0.184*** (0.019)	0.184*** (0.020)	0.177*** (0.021)
Education (Postgrad.)	0.296*** (0.034)	0.313*** (0.034)	0.337*** (0.034)	0.342*** (0.034)	0.343*** (0.036)	0.325*** (0.037)
Employer Controls						
Listed	0.016 (0.020)	0.025 (0.020)	0.010 (0.020)	0.012 (0.020)	0.022 (0.021)	0.026 (0.021)
(Log)Employees	-0.046*** (0.006)	-0.050*** (0.006)	-0.057*** (0.006)	-0.058*** (0.006)	-0.059*** (0.006)	-0.055*** (0.006)
(Log) Revenues	0.001 (0.006)	0.001 (0.006)	0.001 (0.006)	-0.001 (0.005)	0.004 (0.006)	0.006 (0.006)
Mc Fadden R^2	0.75	0.75	0.76	0.75	0.77	0.78
AIC	101,235	102,029	99,569	102,487	94,340	91,173
Log Lik.	-50,594	-50,991	-49,761	-51,220	-47,147	-45,559
Observations	75,557	75,374	74,211	75,640	70,250	68,533

Note: ** $p<0.05$; ** $p<0.01$; *** $p<0.001$. Models 1-5 examine the effect of a specific factor in isolation, while Model 6 employs their joint effect.*

Results from all models are reported in Table 5 and point out in the same direction. The likelihood of an employee to leave a company is affected more by culture values (*β=-0.061, $p<0.001$)*, senior leadership *(β=-0.107, $p<0.001$),* and career opportunities *(β=-0.161, $p<0.001$)*. Most importantly in their joint examination, the effect of compensation/benefits and work-life balance vanishes. Either in the stand-alone models or the joint examination with the

other factors, career opportunities is what influences the results the most. Keeping all other variables constant, an increase in the rating score for career opportunities by one unit decreases the likelihood of an employee to be a former employee by $(e^{(-0.161)} - 1) = 14.87\%$.

4. Extracting qualitative dimensions of employee satisfaction using topic modeling

A limitation of numerical ratings provided by employees against a set of predefined satisfaction aspects is that their information content is constrained by the availability of the measurement scales. As such, other job elements, which are not measured directly and may be of importance for employees, are not captured (e.g., their beliefs about the provided customer service). Online employee reviews have the advantage of coupling the numerical ratings with open-ended responses; thus, allowing employees to reflect on their experience with their current or former employer. Glassdoor asks employees to write their opinion in three separate texts, distinguishing the negative and positive factors of their working experience with the specific company, as well as providing feedback to management. This information allows us to perform a qualitative analysis and to shed further light on the topics of interest. As a tool to perform this analysis, a novel text mining method is used, which advances established topic models, such as Latent Dirichlet Allocation (LDA) based on Bayesian inference (Blei, Ng, & Jordan, 2003).

Topic models, an unsupervised machine learning technique, identifies and organizes (based on hidden semantic structures) a textual corpus in groups of words that appear together in specific groups/topics (deriving a topic-word distribution) as well as documents that can be grouped in a particular topic (deriving a document-topic distribution). Those techniques have recently gained popularity in marketing, tourism, and hospitality research (Guo et al., 2017; Stamolampros, Korfiatis, Kourouthanassis, & Symitsi, 2019; Tirunillai & Tellis, 2014) as methods that allow researchers to perform text analysis in large corpora, while offering at the same time reproducibility of the results, since no human coders are used. For this analysis, the

structural topic model (STM) (Roberts et al., 2016) is employed. STM is a new methodology that extends established probabilistic topic models such as LDA (Blei et al., 2003). The novelty of STM, compared to the aforementioned topic models, is that it allows the document metadata (or covariates) to be included in the prior distributions of the document-topic and topic-word distribution. This relaxes the restrictive assumption of exchangeability, where all authors are considered equally likely to write a document (Blei et al., 2003). As such, the probability of topic prevalence can be modeled, taking into account other covariates, while the change in this probability can be observed across the range of values of these covariates.

The analysis is performed in three steps: the first step considers the pre-processing of the text; the second the identification of the number of topics that explain better the variability of the corpus, and the final step is to see how the topics change with the rating the employees provide, which in fact captures the dominant topics for more satisfied and dissatisfied employees.

4.1 Text Preparation for Analysis

Glassdoor provides a user interface that separates the textual feedback into positive, negative, and feedback to management. After initial inspection, a sentiment scoring procedure utilizing the Hu & Liu (2004) sentiment dictionary was applied to the *negative* and *feedback to management* fields to identify and remove those text parts that were used by employees as placeholders for empty text (e.g., nothing to report; no feedback that I can think of etc).

This resulted in three different textual corpora of uneven size. A subsequent text pre-processing workflow was used to prepare the text for the analysis to each one of the corpora in accordance with the prior literature (Guo et al., 2017; Tirunillai & Tellis, 2014). This included *(a)* word text tokenization, *(b)* elimination of numbers and punctuation marks, *(c)* removal of English language stop words (using the SMART stop-word list) as well as (d) removal of

context-specific stop words, such as the names of the companies in the sample and words attributed to job roles. The resulted corpus was tagged using part-of-speech (POS) tagging. Following the prior literature, token filtering was applied in order to keep only nouns, adverbs, and adjectives as these are the parts-of-speech that contain information. For step (d) the Stanford NLP parser was used. After pre-processing, the remaining words were lemmatized, and filtering was applied in order to keep only those terms appearing in at least 1% of the initial corpus. The final datasets are a set of $Npros_{stm}$=149,289 reviews for the positive, $Nneg_{stm}$=148,354 reviews for the negative and $Nfeed_{stm}$ =135,506 for the feedback to management.

4.2 Estimating the Topic Solution

The topic solution was estimated in R with the STM package (Roberts, Stewart, and Tingley, 2017). Considering that all three parts of the textual feedback stem from the same author, the assumption of a uniform number of topics across all three corpora was incorporated and confirmed by the evaluation of each topic solution. As such, an iterative process to select and evaluate the number of topics was followed (Roberts, Stewart, and Tingley, 2017), utilizing three particular criteria: (a) Held-out likelihood: a measure on how the number of topics explains the overall variability in each of the corpora; (b) Exclusivity of topic words to the topic; and (c) Semantic coherence of the topic structure.

The estimation procedure was initialized with a spectral decomposition following the algorithm of Lee & Mimno, (2014) to get an idea about the extensiveness of the number of topics computed for each of the corpora (*positive* and *negative* feedback) and a seed vector of the possible values for the candidate number of topics (K) was constructed. Considering that the primary metadata associated with the employees' textual feedback is the numerical rating that captures the overall satisfaction, we used this and the employee's status as the primary prevalence covariates. For each of the corpora in the topic solution, the seed vector of the

number of topics had a range of $K_{min}=6$ topics as a seed value, since this is the number of all rating aspects that are provided by Glassdoor on its review interface and evaluated the held-out likelihood for a maximum of $K_{max}=12$ topics in the sample.

The candidate topic solutions with the highest held-out likelihood were then evaluated against the ratio of their semantic coherence and exclusivity. Roberts et al. (2016) proposed a combination of these measures through the FREX criterion, which considers a weighted harmonic mean of a word's rank in terms of exclusivity and frequency in a k-topic solution (Equation 4).

$$FREX_{k,u} = \left(\frac{\omega}{ECDF\left(\beta_{k,u} / \sum_{j=1}^{k} \beta_{j,u}\right)} + \frac{1-\omega}{ECDF\left(\beta_{k,u}\right)} \right)^{-1} \quad (4)$$

*W*here $k \in K$ is the *k-th* topic, u is the word under consideration, β is the topic-word distribution for this topic, and ω is a prior used to impose exclusivity (in our case it was equal to 0.3) in order to avoid highly correlated topics appearing in the topic solution.

After considering the above criteria (See Appendix A), a K=10 topic solution was found to best describe the variability of each of the three corpora, subject to rating and employee status. For the labeling of the topics, a two-step procedure was followed. First, two experts in human resource management and organizational behavior were recruited to help on the labeling of the topics, based on a discussion and reading of the top loading reviews from the topic solution, estimated for each corpus. The second step involved a concordance study of the assigned labels among a panel of 8 experts with substantial experience in human resource management for travel and hospitality services. For each label, the pool of raters provided an agreement (1) or disagreement (0) score with the assigned label. The resulted Cohen's kappa was κ=0.88, indicating an almost perfect agreement among the experts. Considering their feedback, some of the topic labels were adjusted accordingly to reflect the topic content better.

In addition to the estimation of the topic-word and topic-document distribution, we estimated the proportion that each topic reflects on the overall corpus. For the topic solution on the positive feedback (Table 6), some topics occupy a significant portion in that corpus. More specifically, intangible aspects such as the working environment (Topic #1), career opportunities (Topic #2), and on-the-job aspects such as task variety (Topic #3) and flexibility with scheduling (Topic #4) accounted for over 50% of the positive aspects of the textual feedback. Tangible benefits such as compensation (Topic #5) and employee benefits (Topic #6 and Topic #7) accounted for less, highlighting the importance of intangible aspects of the work environment in hospitality and tourism services on driving employee satisfaction. This result is also supported by the insights provided in the previous analysis based on the numerical ratings.

Negative points raised by the employees (Table 7) were mostly concentrated on issues pertinent to management processes and communication (Topic #1) as well as the continuous shift of management roles and managerial turnover (Topic #2). A surprising topic that emerged from the topic solution was topic #8 related to customer behavior. As a high-interaction service industry, customers' challenging behavior has a direct effect on employees' dissatisfaction with their work. Therefore, not only employees moderate the consumption experience but also customers moderate the work experience.

Table 6: Topic Solution for Positive Feedback

Topic #	Topic Label	Prop. (%)	Top 7 Frex Words
1	Working Environment	16.51	great, staff, atmosphere, awesome, fun, friendly, environment
2	Career Opportunities	15.34	opportunity, growth, culture, advancement, training, many, room
3	Task Variety	11.71	always, guest, part, new, place, something, people
4	Scheduling Flexibility	9.49	flexible, schedule, easy, coworkers, co-worker, college, scheduling
5	Compensation	8.91	pretty, money, nice, busy, much, manager, server

6	Employee Perks	8.37	free, discount, food, coffee, drink, meal, shift
7	Benefits	8.05	health, benefits, pro, benefit, insurance, better, bonus
8	Working Hours	7.71	hour, good, high, school, work, wage, job
9	Skills Development	7.18	customer, service, experience, skill, able, fast, product
10	Work/Life Balance	6.73	day, week, month, store, long, night, decent

Other issues that arose from the negative feedback involved particular issues of work conditions such as scheduling (Topic #4) and working unsocial hours with limited rewards (Topic #6). In comparison with the distribution of topics for the positive text provided by the employees, the distribution of topics for the negative text seems to have a more uniform distribution. In the subsequent section, we are evaluating how these distributions change (for the positive and negative text topics) under the influence of two main covariates: Overall Rating and Employee Status (Former vs. Current).

Table 7: Topic Solution for Negative Feedback.

Topic #	Topic Label	Prop. (%)	Top 7 Frex Words
1	Leadership/Communication	13.49	upper, poor, lack, communication, leadership, management, corporate
2	Management Turnover	12.79	store, year, different, month, manager, first, something
3	Work/Life Balance	11.79	long, life, stressful, hour, balance, sometimes, work
4	Scheduling	9.93	back, day, call, one, right, even, front
5	Career Opportunities	9.26	great, little, opportunity, difficult, con, advancement, position
6	Night Shifts and Tips	9.20	server, shift, night, tip, wage, food, break
7	Employee Turnover	8.99	turnover, high, low, rate, extremely, culture, salary
8	Customer Behavior	8.48	rude, customer, service, worker, schedule, enough, amount
9	Benefits	8.41	much, really, car, lot, pretty, insurance, good
10	Managerial Behavior	7.66	horrible, bad, managers, family, favoritism, terrible, benefit

4.3 Assessing the Effect of Overall Rating and Employee Status on the Topic Distribution

The topic distribution, highlighted in the textual justification of employees' online reviews for both the positive and negative aspects, provides an overall picture of the main satisfaction/dissatisfaction determinants. Following the estimation of the topic solution and considering that STM allows us to model the dependence between topic prevalence and other covariates, we investigate: (a) *How does the topic distribution change when other factors are considered?*; (b) *What are the dominant positive (or negative) topics that employees reflect upon when they are overly satisfied (or overly dissatisfied)?;* and finally, (c) *How does the topic distribution change between former and current employees?*

An advantage of structural topic models, a contrast to LDA, is that they allow the incorporation of covariates in the topic-document distribution. This is very important because the fundamental assumption of a topic modeling application considers the case of *exchangeability* in the textual feedback. Employees may use a particular topic as a dominant theme in the text to reflect upon or may equally distribute their feedback (positive or negative) between two or more topics. Having estimated the topic model solution, we can estimate marginal effects in the topic distribution.

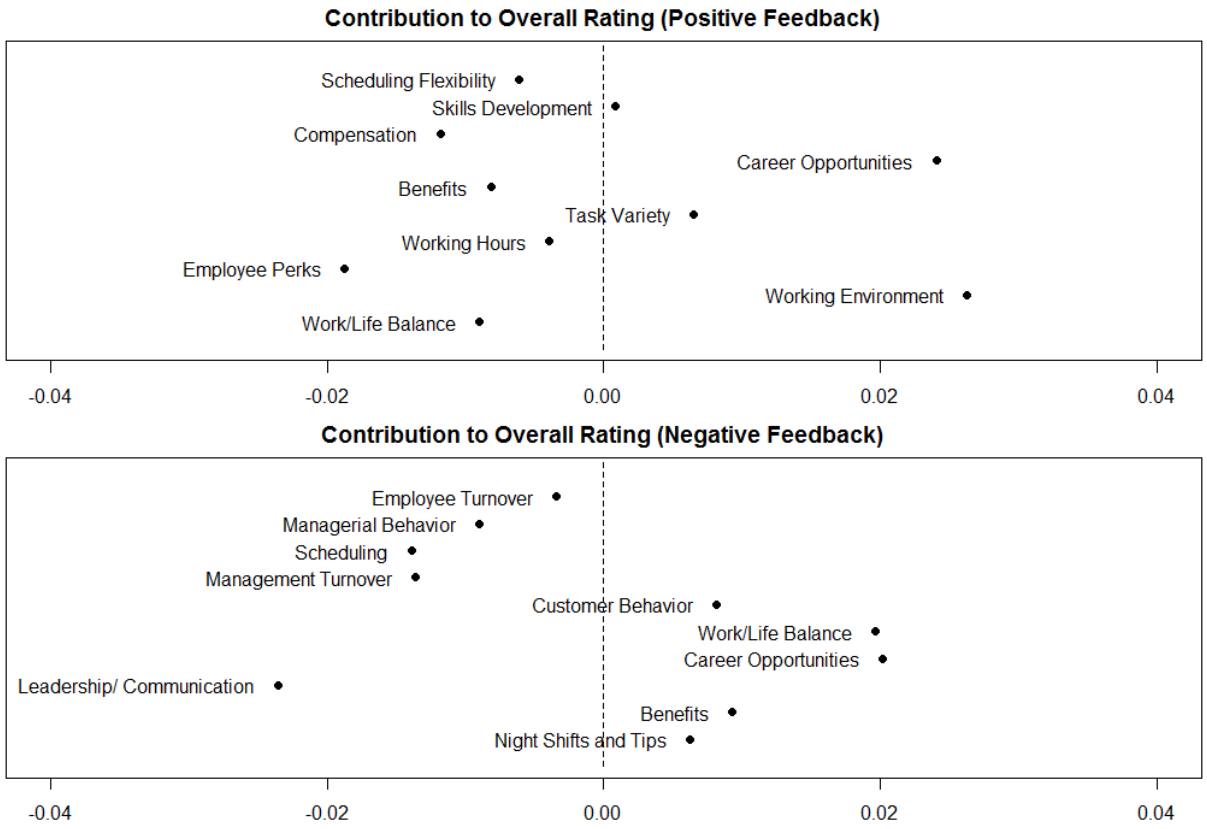

Figure 2: Marginal effects of overall rating (low to high) for the topic distribution of positive (upper) and negative (lower) aspects of the review text. The dotted line represents the zero effect.

Figure 2 provides a graphical depiction of the marginal effects on the topic distribution between low and high overall ratings. The dotted line represents the zero effect. The topics that appear on the right side are those that are discussed more when the overall rating satisfaction increases and the opposite stands for the left side topics. The horizontal axes show the marginal effect, i.e. the positive feedback, where an increase of one unit in overall satisfaction signifies an increase by almost 3% on the reviews that discuss mainly Career Opportunities. The same effect is also observed for the discussion about Working Environment.

It is evident that for satisfied employees the prevalence of the topics related to Career Opportunities and Working Environment is increasing (as a positive aspect of the job). When ratings become lower, issues such as Employee Perks and Compensation tend to become more dominant.

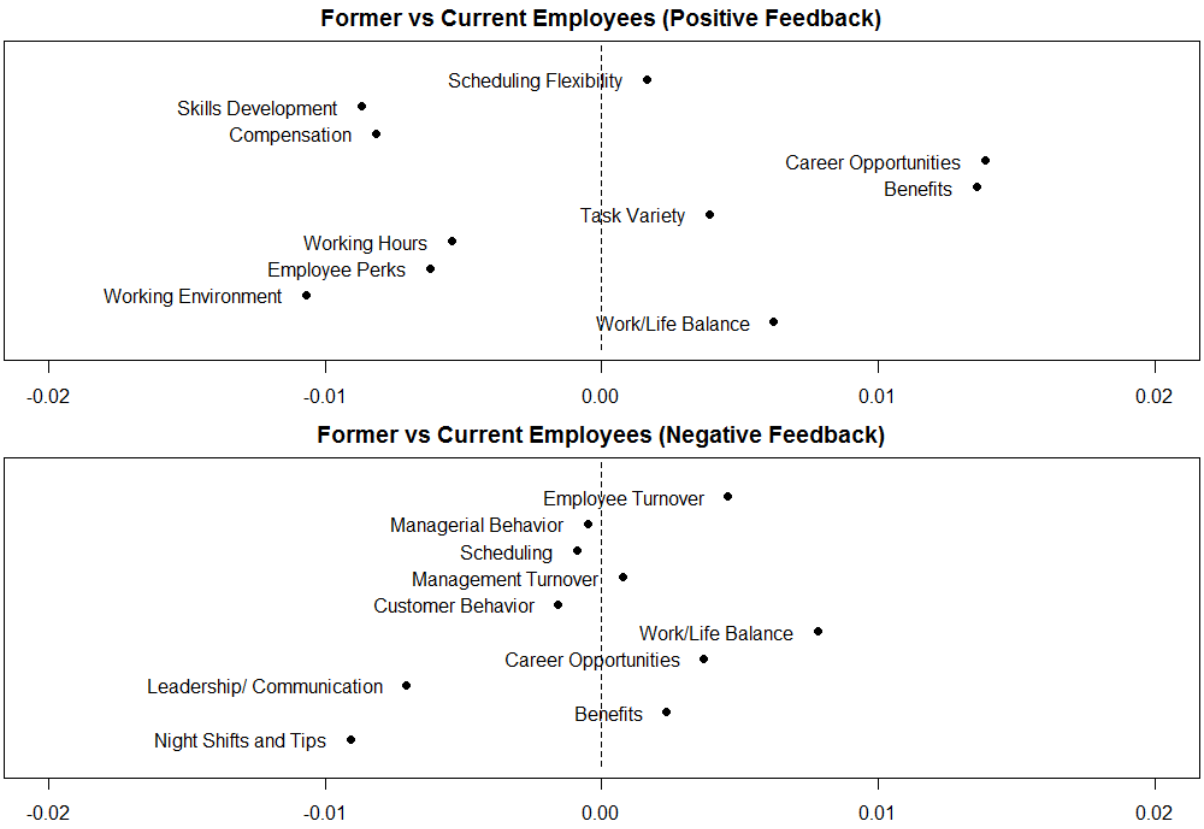

Figure 3: Marginal effects of employee status (former to current) for the topic distribution of positive (upper) and negative (lower) aspects of the review text. The dotted line is the zero effect, and in our case, the topics that are close to this line are the topics that do not differ between former and current employees. The topics that are on the right side are those that were discussed more by current employees and vice-versa for topics on the left side having been discussed mainly by former employees.

A similar result is observed in Figure 3 when assessing the impact of employee status on the prevalence of topics. When it comes to the positive aspects of the job, current employees discuss similar aspects with those reported for overly satisfied employees with career opportunities (together with the benefits) being the dominant topic. This comes as no surprise given the analysis in Section 3.2 regarding the significant drivers of employee turnover. For former employees, the most negative topics discussed tend to cluster around managerial and leadership issues as well as working during unsocial hours.

5. Job satisfaction and Financial Performance of Travel and Hospitality Firms

Having assessed the drivers of employee satisfaction and dissatisfaction and employee turnover, we turn our attention to the economic significance of employee ratings for travel and hospitality firms. Based on the service-profit chain model (Heskett et al., 1994), we should expect that more satisfied employees perform better; thus, influencing positively firm performance. In high-contact services, this effect is expected to be higher due to the higher interaction of employees with customers. At this point, the study aims to quantify the economic effect of employee satisfaction on firm performance, taking into account the changes in overall satisfaction rating. A couple of recent studies have seen this relationship, but they have been conducted for the whole market and not for a specific sector (Huang et al., 2015; Symitsi et al., 2018).

In order to explore this relationship, a subsample of the companies found in our dataset is employed. The reason is that there is a total of 297,933 reviews spread across a 10-year period for the 11,975 firms, meaning that for most of the companies there are no reviews for many periods or the number of reviews is so limited that will induce a bias to the information derived. As such, following previous literature (Symitsi et al., 2018) a cutoff of 100 reviews was selected for the whole period. For those companies, several financial data were collected from Thomson Reuters Eikon Database. After omitting those that were found to report financial results as part of the group of companies they belong to and those for which no financial data were available, the final sample consisted of an unbalanced dataset of 78 firms. Corporate performance is measured with ROA. For the effect of employee satisfaction, the average overall rating employees provide for the specific company for a month is used. Controlling for several financial variables that are used in the finance literature our full model has the following form (Equation 5).

$$ROA_{i_t} = AverageRating_{i_{t-1}} + TotalAssets_{i_{t-1}} + Leverage_{i_{t-1}} + ROA_{i_{t-1}} + CAPEX_{i_{t-1}} + FirmAge_{i_t} + T + C + \epsilon_{i_t} \quad (5)$$

where $AverageRating_{i_{t-1}}$ is the mean rating of current employees[6] for the company for the previous year; $TotalAssets_{i_{t-1}}$ is the logarithm of the total assets of the company for the previous year; $Leverage_{i_{t-1}}$ is the ratio Debt/Total Assets; $CAPEX_{i_{t-1}}$ refers to the capital expenditures; $FirmAge_{i_t}$ is computed from the date of incorporation; T is for time-fixed effects; and C is for industry-fixed effect based on the NAICS sector.

Three specifications were employed for this analysis. The baseline model (1) is for all observations with more than one employee review. However, if only one review exists for the examined period, the insufficient information that arrives from employees could be noisy and may not capture the actual employee satisfaction for a particular firm. Therefore, for reasons of robustness, we employ two subsamples where the first subsample (Model 2) is for all firms with annual reviews above the 25th percentile ($n \geq 4$ observations) and the second (Model 3) for annual reviews equal to and above eight ($n \geq 8$). Results (Table 8) reveal that in all cases employee satisfaction has a statistically significant positive relationship with firm performance. On average, an increase by one star in the overall rating of a company is linked with an increase between 1.2 and 1.4 of ROA. Reverse causality is not an issue here, as lagged variables are

[6] We take into consideration only the information that arrives from current employees as this information is representative of the financial period under examination. In the case of former employees while we know the calendar date the employee posted the review, we do not know his/her departure date from the company, as such those reviews should not represent up-to-date information. For example, an employee who may have left the company five years ago cannot articulate the current working conditions of a company. Therefore, to reduce the noise we used only current employees, and this is an approach that has been followed in the aforementioned previous relevant literature.

employed. Instead, a contemporaneous relationship could reveal dubious results, as higher profitability may also lead to higher employee satisfaction, i.e., in the case of a better bonus.

Table 8: Employee Satisfaction and Firm Profitability

	Dependent Variable: ROA $_t$		
	Model (1)	Model (2)	Model (3)
Average Rating $_{t-1}$	1.199*	1.127*	1.563*
	(0.533)	(0.545)	(0.771)
Leverage $_{t-1}$	2.000**	2.339**	2.534**
	(0.561)	(0.597)	(0.796)
ROA $_{t-1}$	0.592***	0.594***	0.562***
	(0.076)	(0.084)	(0.093)
Total Assets $_{t-1}$	-0.512	-0.201	-0.261
	(0.294)	(0.299)	(0.351)
Firm Age $_t$	0.066***	0.073***	0.056*
	(0.020)	(0.022)	(0.024)
CAPEX $_{t-1}$	0.000	-0.004	0.000
	(0.000)	(0.004)	(0.000)
Constant	2.152	-3.695	-1.667
	(4.927)	(4.830)	(5.264)
Time Effects	Yes	Yes	Yes
Industry Effects	Yes	Yes	Yes
Observations	404	350	276
R^2	0.49	0.57	0.57
Adjusted R^2	0.47	0.55	0.54

Note: ** p<0.05; ** p<0.01; *** p<0.001. Robust clustered (firm) standard errors in parentheses.*

Considering other studies in the literature, which report that employee satisfaction is the outcome of a company's financial performance (see for example Schneider, Hanges, Smith, & Salvaggio, 2003; Yee et al., 2008), we wanted to evaluate whether any reverse causality issues would be exhibited. Using the econometric specification provided in equation (5), we tested the reverse model shown in equation (6) below with the employee rating as a dependent variable.

$$AverageRating_{i_t} = ROA_{i_{t-1}} + AverageRating_{i_{t-1}} + TotalAssets_{i_{t-1}} + Leverage_{i_{t-1}} + CAPEX_{i_{t-1}} + FirmAge_{i_t} + T + C + \epsilon_{i_t} \quad (6)$$

Employing the same model identification procedure as in the previous specification, the results are provided in Table 9.

Table 9: Robustness check for reverse causality

	Dependent Variable: Average Rating $_t$		
	Model (1)	Model (2)	Model (3)
ROA $_{t-1}$	0.001	0.005	0.002
	(0.003)	(0.003)	(0.002)
Average Rating $_{t-1}$	0.544***	0.588***	0.710***
	(0.065)	(0.066)	(0.071)
Leverage $_{t-1}$	-0.066	-0.093	-0.073
	(0.052)	(0.053)	(0.042)
Total Assets$_{t-1}$	0.021	0.019	0.032*
	(0.022)	(0.019)	(0.015)
Firm Age $_t$	-0.001	-0.004*	-0.002
	(0.002)	(0.002)	(0.002)
CAPEX $_{t-1}$	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Constant	1.171**	1.034**	0.568
	(0.358)	(0.350)	(0.320)
Time Effects	Yes	Yes	Yes
Industry Effects	Yes	Yes	Yes
Observations	414	356	280
R^2	0.34	0.40	0.54
Adjusted R^2	0.31	0.36	0.51

Note: ** p<0.05; ** p<0.01; *** p<0.001. Robust clustered (firm) standard errors in parentheses.*

Results of all three models reveal no dependence between the current average rating and the return on assets of the previous period when controlling for all the additional parameters discussed in the previous specification.

6. Discussion and implications

6.1 Theoretical Implications

Our study contributes to the ever-growing stream of the tourism and hospitality literature, which tackles with the perspective of service providers and human resource management aspect of employees in this industry (Baum et al., 2016; Janta et al., 2011; Ladkin, 2011). The results of our analysis reveal a set of important insights about the drivers of employee satisfaction and dissatisfaction in the tourism and hospitality industry and their concomitant effect on employee turnover. This has implications for research in this critical aspect of the tourism and hospitality literature, which are outlined below.

The first theoretical implication of our study is that it is the first to concurrently evaluate the relative importance of the satisfaction aspects extracted from the information content of online employee reviews. While several studies have tried to rank the importance of these factors on employee satisfaction (and subsequently employee turnover intentions), we were able to evaluate the relative importance of these factors by utilizing both numerical ratings and textual content. Hitherto, most studies explore the relationship among a specific factor and job satisfaction or other relevant outcomes. Based on the numerical scales, our analysis shows that some factors are better in explaining satisfaction while other factors are better predictors of dissatisfaction. Following Herzberg's two-factor motivation theory (Herzberg, Mausner, & Snyderman, 2011), the compensation/salary and work-life balance are the "*hygienes*" for employees, while high cultural values and leadership are the "*motivators*", i.e., the factors that, when present, significantly increase job satisfaction.

These findings are also in agreement with the topic analysis which reveals what the employees discuss freely instead of the rating which constrains the information to specific scales. Again, reviewers that provide a high satisfaction score significantly discussed less the remuneration/benefits as positive factors, while also managerial factors such as

leadership/communication are discussed less as negative topics by highly satisfied employees. The study also provides theoretical implications for the determinants of employee turnover. To this end, our findings support the findings of previous studies that report that, although a high dissatisfaction with pay exists in the industry, this has no significant relationship with employee turnover (see, for example, Deery & Iverson, 1996; Riley, Lockwood, Powell-Perry, & Baker, 1998). As our analysis reveals, what mainly causes employees to leave a company is the lack of opportunities for career advancement.

A second theoretical implication of our study considers the direction of causality between employee satisfaction and financial performance. Our analysis clearly shows no reverse causality in that aspect. Satisfied employees bring higher returns, especially in an industry where service quality is a critical success factor. While a set of studies have found (see for example Schneider et al.,2003; Yee et al., 2008) that a reverse link co-exists between job satisfaction and financial performance, our study in the context of tourism and hospitality shows that there is no such reciprocal link. Two major reasons can explain this. The first is the industry effect and its associated employee turnover rate. As we discussed previously, tourism and hospitality is an industry characterized by a high employee turnover rate and the embeddedness in the workforce is minimal, since these jobs are characterized by part-time working hours and seasonal occupation. Furthermore, the low barriers to entry in this particular job, as well as the limited training required to be employed, impose a pressure in compensation. These results provide theoretical support for the direct link of the service-profit model which is confirmed empirically in our study. As such, researchers in the human resource management aspect of the tourism and hospitality literature can evaluate this implication further by considering the satisfaction aspects of the job role.

Finally, our study demonstrates the importance of online employee reviews (and social media in general) as a reliable data source, which also has methodological advances when

compared to established measurement scales. As Matzler and Renzl (2007) argue, employee satisfaction is a multidimensional construct and as such no single measurement instrument can capture all the aspects of satisfaction that are context and industry-specific. As such, researchers in tourism and hospitality human resources can focus their attention on employee feedback expressed in job sites such as Glassdoor, which contains highly representative and reliable information.

6.2 Managerial Implications: What should Hospitality and Tourism Firms Do?

In this study, we showcase the informational value of employee online reviews which can complement information coming from internal metrics. This complementarity arises because online reviews arrive at a higher frequency than internal surveys, but, most importantly, because they offer unconstrained information through the review text offer. Therefore, online reviews can be particularly valuable for firms in order to *(a)* validate the results of existing internal metrics mostly based on primary data; *(b)* capture changes that may occur in the interim period of the lower frequency internal metrics; *(c)* provide information for the adjustment of internal metrics in case employees discuss topics beyond those currently measured; (d) address employee silence issues; and *(e)* gain knowledge of the whole market, acting as a benchmark for the performance of the company.

Considering the results of our analysis, managers need to act to increase employee satisfaction and address the adverse effects of employee turnover and demotivation at work. In order to give tangible guidelines, we utilize the *feedback to management* field that employees provide on Glassdoor. Using the same topic-modeling approach discussed in Section (4), we provide three main directions for improvement for tourism and hospitality companies.

The highest loading is for the discussion about employee treatment. Many employees refer to the need to be respected, treated equally, and receive better behavior. "…*stop treating your employees like thieves, not everyone is trying to steal…*"; "…*start treating your employees*

with respect and you will actually have less employee turnover…"; "*…treat women with respect, treat anyone with respect…*"; "*…employees are real people who need to be treated with respect like real people…*" are some of the many quotes that refer to this problem. Many employees report that they receive negative treatment from their line managers, a fact that signifies lack of training but also inappropriate policies and mechanisms for capturing such behaviors.

To this direction, tourism and hospitality service providers should implement mechanisms that will identify toxic behaviors. Such mechanisms could take the form of anonymous hotlines where employees can report negative treatment towards them or towards other employees, multi-source performance reviews (where employees can give feedback on their bosses anonymously, i.e., 360 reviews), and post-exit interviews, among others. In addition, open dialogue and discussion through communication and agreement of achievable and agreed targets are critical management tools.

Lack of training and its connection with the high employee turnover rate is also revealed in a separate topic. Representative reviews include reflections such as: *"…new employee training should be more straightforward…"*; *"…offer more elaborate training, there is basic training mostly online…"*; *"…get additional training and training plans, following the training plans, will prevent the outrageous turnover rates…"* are what some employees say. It is common knowledge that professionalism is an issue in this industry and in many cases, employees in tourism and hospitality work part-time or on a temporary basis to cover their financial needs (e.g., during their studies). As such, their relationship with a firm has an expiration date, and thus they cannot imagine themselves being part of this company in the future. Considering the nature of the employment in the specific industry, which is based significantly on young people, online and social media recruitment strategies can be used for

both attracting applicants to fill vacancies but also for better screening of the applicants and their fit with the organization (Ladkin & Buhalis, 2016).

It is also clear that firms fail to motivate employees and make the sector more attractive as well as offer a long-time career prospect. Extant research has found that employee perception of training program accessibility is positively related to their commitment level. Employees in tourism and hospitality are more loyal to their organization when training programs upgrade and develop their required skills (Dhar, 2015). Firms can employ several practices in this direction, such as to support employee development through paid or subsidized courses, webinars, job shadowing, mentoring, among others. In doing so, they communicate a message to their employees that the latter is an essential part of the enterprise and they can have a career within this company. In this direction, it is critical for firms to understand their employees' actual needs and goals and then align training with those expectations (Yang, Wan, & Fu, 2012).

Employees also discuss compensatory aspects, such as better payment and reward for their efforts. Typical quotes found in these reviews are: *"…you should not be paying us minimum wage but expect maximum efficiency…*"; "*…minimum wage is not sufficient to cover one's financial obligation…*"; "*…I am a very hard worker that makes the job done, and I'm just looking for better opportunities, so I can support my family a little more financially…*". Most companies do not monitor the financial situation of their employees and do not have an understanding of the personal circumstances of their employees. Neither can they provide solutions following a "stand-by-me" approach. Those firms fail to understand that their employees are their sustainable competitive advantage and their interaction with customers forms the tangible part of an intangible service (Kusluvan, Kusluvan, Ilhan, & Buyruk, 2010). A direction for those firms is to make clear what is expected from their employees in order to gain a better reward. In most cases, employees do not just ask for better wages but for

performance-based compensations. *"…embrace the workers and reward the hard working…", "…recognize your hard workers and not your favorites…"*; *"…give more incentives for your hard workers to continue work hard…"* are some of their quotes, which signify that in many cases productivity is not connected to rewards or the imposed criteria are not clear.

The effect of culture, leadership, and communication is also prevalent, and many employee reviews reflect those values. Typical quotes include: "…l*isten to your associates. The associates that are on your front line and have the interaction with your guest are your most valuable assets. Do not get too focused on numbers and analytics when you have raw data from your associates and your guests…*"; *"…when you say you would like feedback don't dismiss what is being said by them or talk over them because you don't like or agree…"*; *"…continue listening to your employees and assist their needs. Already doing a great job at it…"*. In many cases, employees ask for their active participation in the design and implementation of the policies or product offerings. Firms should not only employ policies and procedures where employees can express their opinions, but they should consider these suggestions, rewarding smart ideas and outline implementation action plans or provide clear justification when an idea cannot be applied. Here comes the crucial role of employee empowerment that simultaneously improves operational performance and the employees' work experience (Cheung, Baum, & Wong, 2012; Lin, Wu, & Ling, 2017). Firms should direct their focus on the implementation of strategies that will allow sharing of information, rewards, and power with employees to make them more autonomous and eager to take initiative and make their own decisions to facilitate customer experience. While the design of HR policies, which are already in place for most firms in our sample, focuses on continuous improvement and evaluation of the company environment, it seems prevalent that a significant portion of employees do not recognize those efforts, signifying that their implementation is unsuccessful or that those policies do not address their actual issues.

7. Conclusions, Limitations and Future Research

Although online reviews have been extensively studied in extant tourism and hospitality research, this is mainly done taking into consideration consumer evaluation, neglecting other information that is shared online and is of interest to researchers and practitioners. A special case of that information is found on employees' electronic word of mouth about their current and previous employers. Extant platforms, such as Glassdoor, allow access to millions of reviews that rate thousands of companies, offering unprecedented opportunities to extend research about the factors that increase job satisfaction/dissatisfaction and employee turnover/attrition.

This study takes advantage of this opportunity and explores the tourism and hospitality industry specifically, an industry with skill-deficiency and high employee turnover. The results are robust, as both numerical rating and text point out in the same direction. i.e., the fact that satisfied employees cite work environment culture, leadership, and career opportunities as what their companies offer. These are also factors that reduce employee turnover. In specific, the regression analysis revealed that a one-unit increase on the rating provided for career opportunities reduces the likelihood of an employee leaving a company by 14.87%. The textual analysis unveils that the discussion about career opportunities as a positive aspect increases significantly when the overall satisfaction increases. On the other hand, the low ratings are connected with more discussion about leadership, communication with management, and managerial behavior in the negative text of the reviews. Tourism and hospitality firms should take into consideration the factors revealed in online employee reviews if they want to increase the job satisfaction of their employees and reduce employee turnover, which eventually leads to higher financial performance. The "wisdom of employees", expressed through the feedback to management, prescribes specific HR policies that firms should follow.

While our study has extensively explored the above by utilizing a novel data set in both the numerical rating and the information content of online reviews, it does not come without limitations, pertinent to the nature of online reviews. A number of biases have been found to govern consumer online reviews, such as self-selection (Li & Hitt, 2008) and response biases (Hu et al., 2009). Interestingly the online reviews found in our sample do not follow the established U-shaped distribution, giving an indication that may be free of these biases. Secondly, the numerical scales for the subcategories in Glassdoor measure satisfaction with *career development, compensation and benefits, senior management, and work/life balance, and culture values.* Though these categories are important in explaining a big part of employee satisfaction and employee turnover, several critical variables are still not measured, such as *working hours, work overload, role ambiguity, role conflict, etc.* The topic analysis addressed to some extent this limitation, as the free text employees provide gives rise to some other topics, essential and relevant to tourism and hospitality research. Moreover, while we looked for direct effects of the job satisfaction aspects, the literature has shown that some act as moderators and, as such, exploring the moderating relationships of these factors needs to be addressed in future research.

There are several future research avenues to extend this study. For example, the effect of a managerial role on job satisfaction is another aspect that needs to be examined more thoroughly. While we examined the satisfaction aspects in the industry as a whole in our sample, considering the differences in perspective between managers and non-managers is something that also needs to be addressed in future studies. Furthermore, within-sector differences may be present, which might be linked to different locations and demographics of the employees as well as employee service culture. While we were able to control for age and education, considering that our sample is limited to US only employees, further cross-country studies could be used to address regional and cultural differences. Moreover, an interesting

extension of the current findings could be on the examination of the effect of employee satisfaction on operational performance and customer satisfaction and its moderating/mediating effect on other important factors such as financial constraints and macro-variables (Stamolampros & Korfiatis, 2019). Finally, as employee online reviews are representative of all sectors of the economy, it will be interesting to examine cross-sectoral differences between the factors the affect employee satisfaction in tourism and hospitality industries and other sectors.

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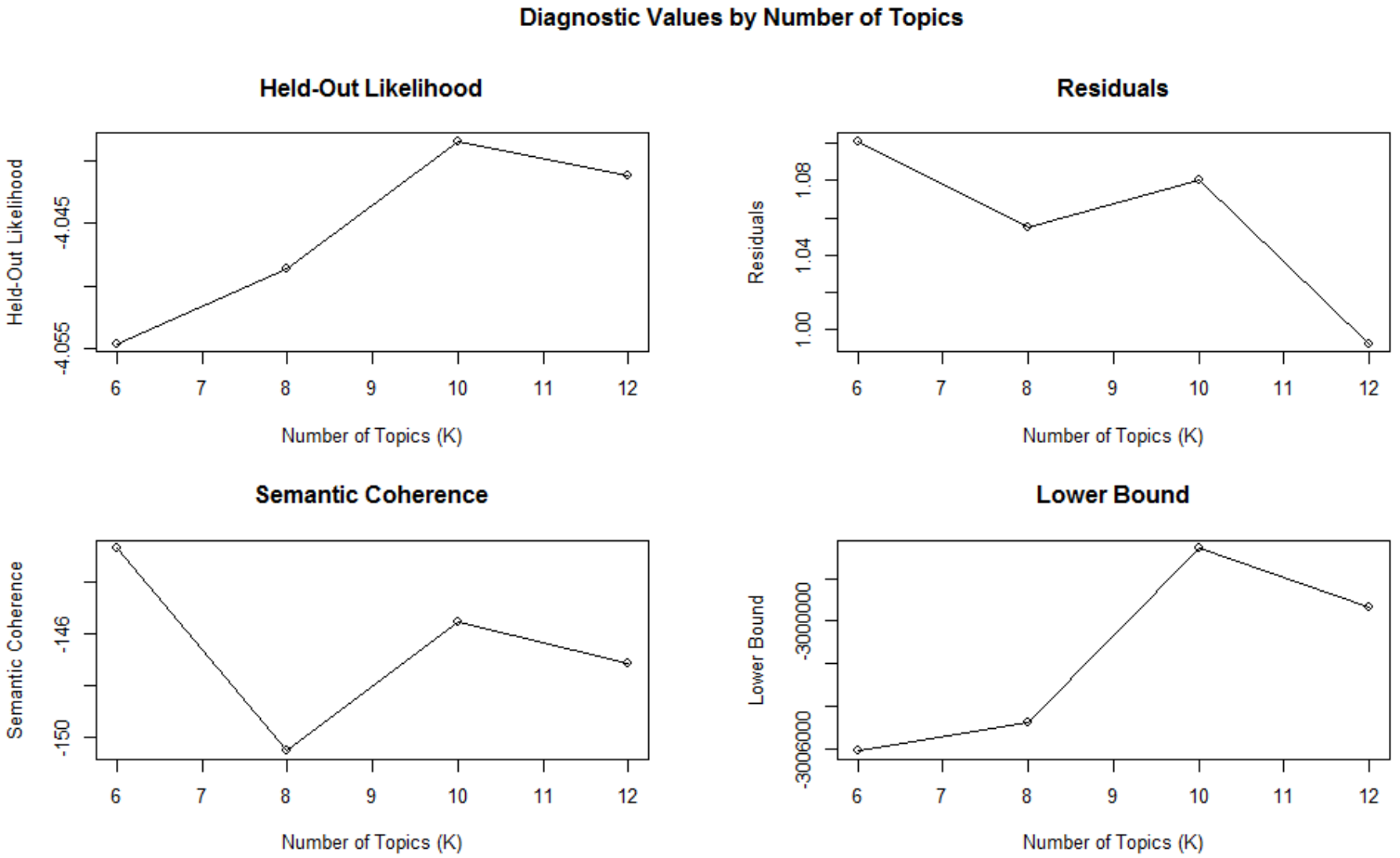
Appendix A: Diagnostic values for the number of topics in the topic solution



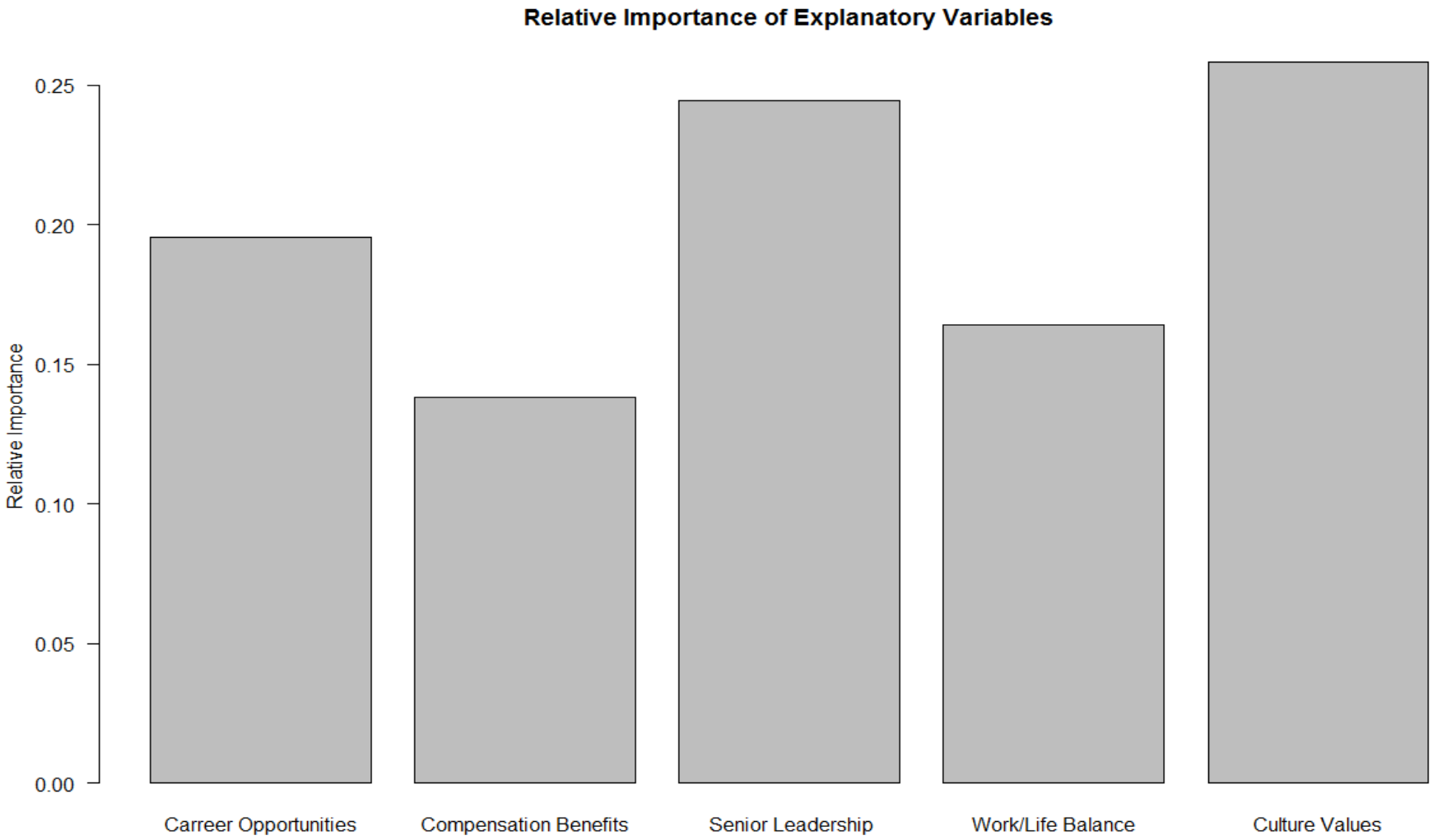
Note: The plot describes the diagnostic values in terms of Held-out Likelihood, Semantic Coherence, Lower Bound for word importance and the residuals obtained for the full model. As can be seen, the best combination is achieved when the number of topics (K) is 10, as this provides the best relationship between the held-out likelihood and semantic coherence

Appendix B

Descriptive statistics of our sample for broken down by sector / industry and employee status (Current, Former).

		Current Employees (M, SD)						*Former Employees (M, SD)*					
Sector / Industry	% of Sample	Overall Rating	Career Ops.	Comp. Benefits	Senior Lead.	Work Life	Culture Values	Overall Rating	Career Ops	Comp. Benefits	Senior Lead.	Work Life	Culture Values
Restaurants, Bars & Food Services													
Casual Restaurants	32.24	3.51 (1.22)	3.24 (1.33)	3.01 (1.29)	3.14 (1.40)	3.26 (1.34)	3.54 (1.38)	3.07 (1.27)	2.76 (1.30)	2.66 (1.26)	2.64 (1.40)	2.93 (1.36)	3.08 (1.44)
Catering & Food Service Contractors	4.17	3.43 (1.31)	3.24 (1.39)	3.13 (1.27)	3.08 (1.47)	3.26 (1.38)	3.38 (1.45)	2.83 (1.36)	2.63 (1.34)	2.72 (1.29)	2.45 (1.42)	2.79 (1.41)	2.75 (1.47)
Convenience Stores & Truck Stops	1.56	3.53 (1.27)	3.43 (1.33)	3.50 (1.34)	3.22 (1.41)	3.05 (1.37)	3.58 (1.42)	3.01 (1.39)	2.89 (1.41)	3.05 (1.41)	2.59 (1.46)	2.67 (1.38)	2.93 (1.53)
Fast-Food & Quick-Service Restaurants	29.17	3.47 (1.21)	3.15 (1.32)	2.89 (1.37)	3.05 (1.38)	3.25 (1.33)	3.47 (1.40)	3.16 (1.25)	2.76 (1.31)	2.57 (1.30)	2.70 (1.38)	3.06 (1.34)	3.10 (1.43)
Upscale Restaurants	1.58	3.67 (1.26)	3.38 (1.34)	3.35 (1.27)	3.34 (1.44)	3.40 (1.32)	3.61 (1.41)	3.15 (1.36)	2.81 (1.34)	2.97 (1.29)	2.73 (1.47)	2.89 (1.37)	3.04 (1.49)
Travel & Tourism													
Airlines	4.7	3.57 (1.29)	3.37 (1.33)	3.36 (1.28)	3.07 (1.44)	3.36 (1.33)	3.48 (1.43)	3.19 (1.36)	3.00 (1.37)	3.16 (1.33)	2.65 (1.44)	3.01 (1.39)	3.11 (1.50)
Bus Transportation Services	0.88	3.16 (1.28)	2.87 (1.38)	2.87 (1.33)	2.73 (1.41)	3.05 (1.43)	2.93 (1.45)	2.82 (1.36)	2.62 (1.35)	2.80 (1.36)	2.36 (1.43)	2.71 (1.45)	2.57 (1.43)
Camping & RV Parks	0.03	3.86 (1.21)	3.27 (1.52)	3.23 (1.23)	3.52 (1.43)	3.46 (1.36)	3.59 (1.41)	2.60 (1.55)	2.26 (1.12)	2.30 (1.10)	2.40 (1.50)	2.71 (1.38)	2.34 (1.36)
Car Rental	4.29	3.45 (1.25)	3.68 (1.29)	3.30 (1.25)	3.31 (1.39)	2.71 (1.42)	3.58 (1.39)	2.83 (1.22)	3.07 (1.30)	2.78 (1.20)	2.63 (1.33)	2.15 (1.23)	2.92 (1.40)
Charter Air Travel	0.43	3.17 (1.41)	2.94 (1.43)	3.08 (1.28)	2.78 (1.52)	3.01 (1.36)	3.06 (1.49)	2.69 (1.39)	2.42 (1.30)	2.77 (1.26)	2.24 (1.40)	2.62 (1.38)	2.56 (1.47)
Cruise Ships	0.5	3.54 (1.38)	3.30 (1.43)	3.26 (1.28)	3.09 (1.42)	3.11 (1.34)	3.37 (1.45)	2.97 (1.45)	2.80 (1.41)	3.00 (1.28)	2.49 (1.43)	2.52 (1.37)	2.86 (1.54)
Hotels, Motels, & Resorts	17.27	3.65 (1.28)	3.43 (1.38)	3.31 (1.31)	3.29 (1.45)	3.38 (1.35)	3.68 (1.41)	3.12 (1.37)	2.89 (1.38)	2.96 (1.33)	2.71 (1.47)	2.93 (1.38)	3.11 (1.52)
Passenger Rail	0.22	3.26 (1.31)	2.99 (1.45)	3.59 (1.28)	2.57 (1.36)	3.14 (1.45)	2.76 (1.39)	2.98 (1.37)	2.94 (1.35)	3.51 (1.36)	2.45 (1.36)	3.09 (1.41)	2.68 (1.40)
Taxi & Limousine Services	0.27	3.42 (1.48)	3.12 (1.52)	2.92 (1.40)	3.21 (1.57)	3.34 (1.40)	3.32 (1.58)	2.50 (1.44)	2.13 (1.29)	2.31 (1.31)	2.19 (1.44)	2.55 (1.44)	2.34 (1.46)
Travel Agencies	2.7	3.72 (1.39)	3.50 (1.44)	3.43 (1.30)	3.49 (1.51)	3.66 (1.37)	3.77 (1.46)	2.74 (1.41)	2.51 (1.35)	2.74 (1.29)	2.40 (1.47)	2.83 (1.42)	2.74 (1.51)

Appendix C: Relative Importance of Explanatory Variables



Note: The plot describes the relative importance of the five job elements measurements scales to the overall satisfaction. The computation is based on partial R^2 partitioned by averaging over orders also known as the LMG metric (Lindeman et al., 1980).