ROBOTIC SOLUTIONS FOR THE CHALLENGES OF HUMAN LABOR: MANAGER PERSPECTIVE

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ABSTRACT

Managers have to endure some costs in order to develop human resources, which is one of the most significant providers of organizational performance. These costs are expenditures for human resources activities and customer dissatisfaction caused by work accidents and negative personnel behaviors. This study primarily aims to determine the expenditures made by the managers and the behavior of the employees that disturb the guests. Text mining methods is used to identify cost of human labor and employee behaviors referred to by managers' reviews, and association rules is used to find out common cost and behaviors in managers' reviews. The secondary aim of the study is to investigate the managers' intentions to employ robots to solve human-induced challenges. Contrary to the literature, managers believe that robots cannot contribute to the solution of these problems and they don't think to work with service robots.

INTRODUCTION

The quality of human labor is essential for the service quality and the customer satisfaction (Prentice et al., 2020), hence human resource issues continue to be forefront of global tourism's challenges. Customer satisfaction and perceptions of service quality are heavily dependent on frontline employee service delivery behaviors such as responsiveness, courtesy, keeping promises, and personal attentiveness (Bettencourt & Brown, 2003). Organizations have to pay for all the human resources activities (HRA) from the recruitment to retention of the personnel and for food, lodging, transportation and infirmary services offered to personnel (Meriç & Babur, 2020). Furthermore, the cost of the attitudes and behaviors

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by the personnel and the work accidents are lowering organizational performance.

Hotel management's struggles to promote service quality should be based on managing staff behavior (Awasthi et al., 2020) which is the basis of customer evaluation of service quality (Tsaur & Lin, 2004; Kattara et al., 2008; Choi et al., 2020). Hotel managers should empower the employees and take the necessary precautions to get rid of job stress, causing problems, for the quality of work in accommodation facilities. Even a qualified human labor cannot always keep up with the guest's queries and frivolous requests. Intense workload and the stress it generates can cause employees to exhibit some behaviors (Awasthi et al., 2020) that will cause service failures and reduce service quality (Kavurmacı & Demirdelen, 2015). These behaviors affect the guest satisfactions negatively (Kattara et al., 2008; Beatson et al., 2008). It is for this reason that managers require the employees to always comply with the courtesy rules, smile, and wants to fulfill with tolerance even requests or orders not pertain to their duties, in order to keep customer satisfaction at the highest level. Hospitality industry has solutions enabled artificial intelligence and machine learning (Bhushan, 2021) such as robots, chatbots, mobile apps and kiosks to prevent this adverse situation and increase services quality (Gursoy et al., 2019) and customer satisfaction (Mariani & Borghi, 2021).

Unlike human workers, artificial intelligence devices such as robots, chatbots, kiosks and mobile apps can provide the consistent standard of service in all conditions (Wirtz et al., 2018), with the precision, endless energy, and high skill levels (Li et al., 2019), free from human-specific behaviors (Wirtz et al., 2018). These devices can operate 24/7 hours (Kılıçhan & Yılmaz, 2020) without the concept of overtime, human problems, leaving the word of the management, getting tired and any objection (Ivanov & Webster, 2017). As a result of these features, hospitality companies have integrated these devices into hotel operations worldwide through strategies to simultaneously reduce cost (Li et al., 2019; Mariani & Borghi, 2021) and workload (Drexler & Beckman Lapré, 2019), and improve service quality (Belanche et al., 2021; Mariani & Borghi, 2021). Likewise, there has been a drastically increase in tourism research on artificial intelligence and robotics. However, previous empirical studies have focused on guests' perceptions (Yu, 2020; Prentice et al., 2020; Belanche et al., 2021) and their reactions to iteractions (Gursoy et al., 2019; Mariani & Borghi, 2021; Ayyildiz et al., 2022), and studies remain lacking on manager's opinion about robotic recruitment (Ivkov et al., 2020).

Guests complain often about staff with their unacceptable attitude, insufficient foreign language proficiency and a lack of hotel knowledge (Choi et al., 2020). Frontline managers have to solve human-related problems and guest complaints. In addition, they are responsible to carry out various human resources activities in order to have a quality human resources. Therefore, the opinions of decision makers staff about robot employment are important. Successful implementation of robotic technologies is not possible without considering the benefits and needs from both employees (Vatan & Dogan, 2021) and managers (Ivanov et al., 2020; Chi et al., 2020). However, apart from a few (Dogan & Vatan, 2019; Ivanov et al., 2020; Pizam, et al., 2022), studies haven't focused on what supervisors and decision makers think. This study emphasizes the importance of the manager's opinion for robot employment, is valuable with this feature and fills the gap in the literature. So that, it was carried out to get the opinions of hotel managers who are personally responsible for the usage of robots and offer them to the customers.

The main question of the study is "Do cost and fault of human labor lead to hotel managers to hire robotic technologies?". The study first determines what investments hotel managers make in their employees to increase service quality and reveals unintentional employee behaviors that negatively affect customer satisfaction. Then to reveal the answer to the question and to determine how far the managers are from robotic solutions in order to reduce personnel expenditure and customer dissatisfaction as a result of personnel behavior, in-depth interviews were preferred instead of quantitative research. Thus, every manager was given the opportunity to convey every expenditure s/he made and any employee-related problem.

LITERATURE REVIEW

Challenges Caused by Human Labor

The services which are the main output of hospitality organizations are produced and consumed simultaneously, usually at the location of service providers (Kusluvan et al., 2010). Employees provide the services in person at the same place where they have direct and intangible relationships with consumers (Madera et al., 2017; Prentice et al., 2020). The customer evaluates the service on dimensions such as civility, concern, understanding, and listening demonstrated by the staff (Tsaur & Lin, 2004). The person providing the service essentially ensures that the guest is satisfied, revisits (Meriç & Babur, 2020) and recommends the facilities to others and determines whether tourists will have a total experience

(Beatson et al., 2008; Darsana & Sudjana, 2022). The quality of tourists' experiences and perceptions in a hotel is highly depending on staff' professionalism (Aynalem et al., 2016; Awasthi et al., 2020).

Human assets, which are vital for the organizations and viewed as valuable and strategic assets (Baum, 2015; Wirtz et al., 2018), are invested in and developed rather than costs to be controlled (Kusluvan et al., 2010; Awasthi et al., 2020). Because, human assets, including employee personality, knowledge, experience, skills, ability, attitudes, and customer-oriented behaviors in hospitality organizations are critical for service quality (Tsaur & Lin, 2004), customer satisfaction and loyalty, organizational performance, and competitive advantage (Wirtz & Jerger, 2016; Darsana & Sudjana, 2022). The existence the pool of unemployed, easily replaceable and low-skilled employees, the competitive pressure on organizations, deficient methodology of studies, lack of unionization, small profit margins and high costs, unprofessional managers and owners, unstable and insufficient demand, seasonality, workforce turnover rate, low cost–low price business strategies and tourism graduates choosing a job in another field cause difficulties for organizations to have quality employees (Kusluvan et al., 2010). Organizations apply some HRA to ensure the effective and efficient use of human labor to accomplish organizational goals (Tiwari et al., 2019). Recruitment and selection, training and development, orientation, empowerment, reducing job stress, motivation, compensation and benefits, performance appraisals, and terminations are some of these activities (Armstrong, 2010; Wirtz & Jerger, 2016; Madera et al., 2017).

The crucial issue is not to having better HRM procedures, it is how they are implemented and ownership of implementation by frontline managers. The role of frontline managers is vital in the way they enact and implement policies, show leadership in dealing with staff and in exercising control come through (Armstrong, 2010; Madera et al., 2017). Manager, demonstrating authoritarian, hierarchical and autocratic and command and control-based styles of management effect negatively the employee (Meriç & Babur, 2020). Being exposed to behaviors that do not comply with business ethics and morals, such as mobbing, psychological, and physical violence, sexual harassment, slander, distract the employee from the organizational goals (Poulston, 2009). No matter how qualified the employees are, it is not possible for them to be successful and positively affect the performance of the organization under mismanagement (Awasthi et al., 2020). However, tourism is suffering from the leadership, innovating, inspiring, motivating, and leading others to perform, and following the

rapidly changing technologies and new disciplines (Baum, 2015). Human labor managed poorly is a threat to be considered for service delivery systems, profitability, and income generally (Poulston, 2009).

In order to have qualified employees, the one of the first HRA is recruitment and selection systems the right staff which enhance the firm performance (Wirtz & Jerger, 2016; Madera et al., 2017). The lack of qualified staff, which is the biggest need of the tourism industry, is increasing day by day in parallel with the increasing bed capacity. Organizations need employees who speak at least one foreign language, well-trained and skilled in the field of tourism (Aynalem et al., 2016), have adequate service capability (Tsaur & Lin, 2004), and whose personality is suitable for working in the sector (Wirtz & Jerger, 2016). To be sustainable, tourism must have personnel with high qualifications and tendency or predisposition to meet customer needs (Darsana & Sudjana, 2022). However, especially during the peak seasons, most of tourism and hospitality organizations employ unskilled and untrained labor such as intern students and seasonal workers to meet the high demand for their services and also for a cost-reduction strategy (Kusluvan et al., 2010). This causes businesses to have less qualified workforce and not to provide the same quality and trouble-free service which leads a lack of qualifications in the hospitality sectors.

Hotel managers conduct HRA to ensure for excellent and prompt service delivery system based on human assets which is arguably the most prominent assets of the organization (Wirtz et al., 2018). However, the working conditions of the tourism sector such as unstable employment, long antisocial working hours, low job status and low pay practices make established service delivery system difficult to be sustainable. Sector working conditions consequence the difficulty of recruiting suitable staff and high staff turnover (Aynalem et al., 2016) which destroy the service delivery system. Managers have to make more effort to empower the staff to keep the system running (Awasthi et al., 2020). Proper orientation and periodic training, acquainting employees with work roles and job-related tasks can provide such benefits as service quality, superior employee productivity, employee performance, job satisfaction and intention to remain in the organization (Kusluvan et al., 2010). Additionally, reward systems (Awasthi et al., 2020), training, and development strategies enhance firm performance (Madera et al., 2017).

In addition to the salaries and overtime wages they pay for their employees and their insurance premiums, organizations spend on food,

service for transportation, infirmary for health services and lodging for accommodation (Meriç & Babur, 2020). If the accommodation, transportation, food, and medical services supplied are in demotivating conditions (poor quality, irregular, sloppy), it may convey the message that employees are not cared for or valued (Kusluvan et al., 2010). Employees should be satisfied and motivated with the organization's HRA and their employment conditions to deliver more qualified service and satisfy customers (Tsaur & Lin, 2004; Kusluvan et al., 2010; Díaz-Carrión et al., 2020). Satisfied and motivated employee behave more positively (Meriç & Babur, 2020; Awasthi et al., 2020), provide higher service, and promote more satisfying customer relationships (Wirtz & Jerger, 2016).

As tourism is people intensive industry, managers are likely to deal with concerns such as absenteeism, some disciplinary issues, poor timekeeping, underperformance, and negative behavior (Armstrong, 2010). Employees may claim that they are unwell the day before and cannot attend, so finding the replacement can be pretty hard (Poulston, 2009). They can cause some disciplinary issues and unethical behaviors while they are doing their jobs, also in their social life. They may not manage time well and perform well below their abilities, causing service failures. With job stressors such as job characteristics, interpersonal relationships, heavy workload, job insecurity, and lack of career development (Kusluvan et al., 2010) and the tremendous outrageous demands of visitors (Poulston, 2009), unnecessary dissatisfaction and constant expectations of special attention strain the limits of tolerance of the employees (Awasthi et al., 2020). These cause even the highest quality, calmest, most educated employee to behave in a way that negatively affect service quality and guest satisfaction (Armstrong, 2010). In fact, especially in the hotel organizations, where many people start to work with enjoy, the lack of proper arrangement of the working area, unstimulating work, lack of leave, staff shortage cause boredom and fatigue over time (Meriç & Babur, 2020). If employees feel tricked, they will exhibit conscious actions such as stealing and loafing, as well as sudden and uncontrollable responses such as anger and impatience (Poulston, 2009).

One of the difficulties that the hotel management has to deal with is work accidents causing service failures which must be recovered by the management. While the employee is affected by workplace accidents in another sector, both the employee and the guest can be affected in the tourism sector. Poor physical environment, fatigue as a result of long and tiring working hours (Meriç & Babur, 2020), insufficient training of the employee, and inattention and carelessness based on different reasons can

cause accidents (Akkus et al., 2022) involving the guests during the service. Sometimes, accidents that only affect employees such as slips, falls, electric shocks, breakdowns of devices, poisoning, incision, and even death (Kavurmacı & Demirdelen, 2015), do not cause any physical harm to the guest, but reduce the quality of the service. Even if the guest does not get involved in the accident, the service s/he receives may decline its quality, the employee may be disabled, the preparation of a new service or product will take time, causing the service' quality to deteriorate. Therefore, the guest involved in the accident (for example, something spilled on her or him) will be physically bothered, and even if s/he is not involved in the accident, s/he will be unhappy because the service will be late (Akkus et al., 2022), which is a great loss for the organizations. So that organizations must provide essential expenditures in occupational health and safety (Armstrong, 2010; Kavurmacı & Demirdelen, 2015).

A robot is an employee who does not need human-like family support, accommodation, rest, moral support, and food, and does not have the characteristics such as anger, fatigue, carelessness, forgetfulness, stress, and being affected by mobbing. Robots don't require any additional cost, such as salary, bonus, insurance, and overtime pay, apart from purchase and the repair cost in case it breaks down. Furthermore, the training, orientation, socialization, motivation of the personnel recruited every season cause time loss and sometimes money loss for the organizations. The robot, on the other hand, does not have features such as quitting the job, disliking the job, striking, objecting, gossiping, and it never needs motivation or socialization and training, other than the training given at purchase (or the downloaded program), unless there is a change in products and services. In this case, employing robot workers instead of humans or supporting humans in performing routine (Çilingir Ük et al., 2023), boring or dirty work that people do not prefer (Ivanov et al., 2020), can be a profitable choice for the organizations.

Robotic Solutions for humanitarian problems

Humans provide services in the tourist sector, which can lead to conflicts between individuals in commercial relationships. The workload, irregular working hours, employee and guest behaviors, and long working hours cause these problems (Kavurmacı & Demirdelen, 2015). These problems should be eliminated or at least reduced to an acceptable level in order not to harm the service quality and thus customer loyalty and satisfaction. However, the solution of these problems becomes difficult due to tourism

business and employment conditions such as seasonality, excessive hours of work and low-paid labor.

Kusluvan et al. (2010) suggests for mitigating job stress, which influences employees' job satisfaction, work performance and turnover, some HRA such as reducing work overload, ensuring job security, forging long-term employment relationships, complementing the core staff, and interfering with employees' non-work responsibilities. However, by employment of the robotic technologies, organizations can finish the problems caused by job security and employees' non-work responsibilities, as well as minimize work overload and complement the core staff (Carvalho et al., 2022). One of the most effective and easiest ways to do these operations is to incorporate new technologies into business processes (Kala, 2022). The tourism organizations have already partially or completely run robotic technologies for operations (Çilingir Ük et al., 2023), marketing's and finances' functions and human resources (Manthiou et al., 2021). Usage of robotic technologies have increased because of strong competition, the need for greater productivity and efficiency, and a shortage of manpower as well as changing guest expectations (Manthiou et al., 2021; Gupta et al., 2022).

Some of robotic technologies are physically present and embodied in the user's space like robots and kiosks and some are not physically present and are only digitally embodied like chatbots, virtual agents and mobile apps (Tung & Law, 2017; Wirtz et al., 2018; McCartney & McCartney, 2020). Both software based (non-physically) and hardware based robots (physically) (Belanche et al., 2020) are adopted for hospitality companies to increase productivity (Yu, 2020; Ivanov & Webster, 2020) and profitability, decrease labor costs and the workload of employees, improve the quality of operations, and provide cheerful experiences (Gupta et al., 2022) and high-tech entertainment (Drexler & Beckman Lapré, 2019; Lukanova & Ilieva, 2019). However, employment of robotics devices is now being debated (Li et al., 2019; Ivanov & Webster, 2020; Manthiou et al., 2021; Carvalho et al., 2022) in terms of whether they are a threat to jobs substituting employees with (Ivanov & Webster, 2017; Li et al., 2019; Koo et al, 2021) or serve as a positive social-change agent contributing to the more comfortable and more efficient execution of daily operations (Kılıçhan & Yılmaz, 2020; McCartney & McCartney, 2020). This study advocates that robots will offer removing burden from staff and service improvements, instead of replacing human employees (Carvalho et al., 2022).

Robotic devices can work with humans, enhancing the employees (Ivanov & Webster, 2017) and customer experiences (McCartney & McCartney, 2020; Prentice et al., 2020; Knani et al., 2022; Gupta et al., 2022), and remove some of the dirty, dull, dangerous (Ivanov et al., 2020) and timeless tasks from the humans. Therefore, lowering labor costs is not to mean laying off workers completely, it is enabling human laborers to do more work with less human labor (Webster & Ivanov, 2020). The complement of human task by robots and artificial intelligence decreases the cost of training of employee, salary, food, insurance and other expenditure pertain to have qualified human assets. Furthermore, robots and software can be produced faster than humans can reproduce and support human to work faster (Webster & Ivanov, 2020) and with fewer errors in the workplace (Bhushan, 2021; Ayyildiz et al., 2022). One more feature of these devices is that they don't need human requirements such as sleeping, resting, being motivated, being rewarded. Additionally, these robotic technologies have some features that make manager' life much simpler, which are not going on strikes, discriminating employees or customers, spreading rumors, showing negative emotions, asking for pay increases, getting ill, shirking from work (Webster & Ivanov, 2020), quitting their job without notice (Ivanov, 2019), theft at sales points and causing revenue loss (Kılıçhan & Yılmaz, 2020) etc.

Those who work in low-skilled, low-payed jobs that do not require qualified personnel, especially in housekeeping and food and beverage departments, are less educated, receive little training, are not empowered, earn little, and have a lack of motivation and engagement (Wirtz & Jerger 2016; Manthiou et al., 2021), however, occupational accidents and undesireble behaviors have negatively impact on guest satisfaction. One of the biggest challenges of hospitality companies is the training of staff, coming from the labor pool, and moreover, they turn over the job due to seasonality or other personal reasons (Poulston, 2009). Robots, working in the same jobs, are sufficiently trained and skilled enough not to interrupt the service. The training of robots, either through updating coded knowledge or through machine learning, is not the same as humans (Wirtz et al., 2018). Robotic technologies' scope could be expanded with hardware and software upgrades. By installing new software, for example, a kiosk can be used for another purpose (Ivanov, 2019). A robot can share information and experiences with the other robots on the network (Tung & Law, 2017). Moreover, by hiring the robotics, tourism and hospitality companies don't need to train employees, which takes both money and time (Ivanov, 2019).

Tourists, who are accustomed to the speed of technology and the smooth operation of their transactions, wait for the same speed and transactions in check-in, payment, order, and check-out transactions for their holidays (Gupta et al., 2022). Robotic technologies help customers to receive information about the hotel activities (Dogan & Vatan, 2019; Pizam et al., 2022) and destination (Touni & Magdy, 2020; Belanche et al., 2020) faster than employees' promptness in response to their requests (Prentice et al., 2020; Gupta et al., 2022). So, they help to reduce waiting times (Yu, 2020; Belanche et al., 2021) especially for guests who want quick access to information (Belanche et al., 2020), and don't want to waste time by contacting an officer and waiting for him to do their transactions (Lukanova & Ilieva, 2019). For hotels, efficiency and effectiveness of services and operations performed by staff are measured by the time (Dogan & Vatan, 2019) needed to execute them (Tussyadiah & Park, 2018) and by the results of guest's experience (McCartney & McCartney, 2020). Robotic technologies develop efficiency and effectiveness (Carvalho et al., 2020; Çilingir Ük et al., 2023) by reducing service failures (Ivanov, 2019; Vatan & Dogan, 2021) and labor costs (Ivanov & Webster, 2017), removing linguistic barriers (Lukanova & Ilieva, 2019), bringing entertainment (Lin et al., 2019) and enjoyment for guests (Li et al., 2019; Wirtz et al., 2018), enhancing the productivity of humans (McCartney & McCartney, 2020; Knani et al., 2022), increasing customer choice and convenience (Lukanova & Ilieva, 2019), reducing waiting times and making the service delivery system funny (Lin et al., 2019) and entertaining (Ivanov, 2019) which may be likely to increase service quality (Bhushan, 2021) and indirectly ensure customer satisfaction and loyalty (Kılıçhan & Yılmaz, 2020; Gupta et al., 2022).

Employees in tourism industry suffer from workload, long and tiring working hours, stress, guest behavior and requests, seasonality, shifts, routine, and boring tasks. Robotic devices can operate 24/7 and serve numerous customers simultaneously (Ivanov & Webster, 2017) and as a multilingual application can serve customers from different nationalities (Ivanov, 2019; Lukanova & Ilieva, 2019). These help the organizations to serve when customers need help and information regardless of time and guest behaviors, which contributes to reducing the staff workload (Lukanova & Ilieva, 2019; Gursoy et al., 2019; Vatan & Dogan, 2021). Besides, deploying robotic technologies in night shifts, where many people are reluctant to work create a workforce, working 24/7 (Kılıçhan & Yılmaz, 2020), thus improve productivity as well (Ivanov, 2019). Robotic devices can be worked for the labor, entailing long hours and unsafe/unhygienic conditions, since they do not yet have human rights (Ivanov & Webster,

2017). While doing all this activities, they don't get ill, complain, strike, shirk from work (Ivanov, 2019), forget (Ivanov & Webster, 2017), exhibit mood swings, make mistakes (Murphy et al. 2017), have biases (e.g. by ethnic group, age, gender, and social status) (Wirtz et al., 2018), and thus they increase service capacity of hospitality companies (Ivanov, 2019; Ivanov & Webster, 2020).

Employees of the guest relations department are in constant communication with the guests to conduct surveys, announce all activities to be carried out inside and outside the facility, provide information, and follow up on complaints. Employees have to be friendly to every visitor, answer their questions sincerely, not get tired and answer simultaneously with the questions. Here the robots perform these task thousands of times without complaints (Vatan & Dogan, 2021) and without forgetting to do it (Ivanov & Webster, 2017; Carvalho et al., 2022). Robotic devices communicate with customers in different languages (Ivanov & Webster, 2017; Çilingir Ük, 2023). It allows companies communicate with more customers in more languages (Ivanov, 2019). Tourists use these devices to obtain information pertain to hotel and destination (Dogan & Vatan, 2019), solve doubts, and find objects or locations (Melián-González et al., 2021) due to more consistent service delivery (Gursoy et al., 2019; Carvalho et al., 2022; Ayyildiz et al., 2022; Çilingir Ük et al., 2023) with more potential for leading or correct information (Manthiou et al., 2021). Concierge robots, significantly related to both customer satisfaction and loyalty (Prentice et al., 2020), help guests to check-in, provide information about hotel facilities and services, dining facilities, weather forecasts, destination's attractions and more (Tussyadiah & Park, 2018). The artificially intelligent concierge robots learn about guests and their requirements, and extend their knowledge with every interaction with guests, then they provide more complete and more accurate information (Lukanova & Ilieva, 2019).

To summarize, robotic technologies assist employees to complete tasks as quickly as possible, such as check-in and check-out operations, hotel housekeeping, room service and concierge (Ivanov et al., 2020). That allows employees have more time and opportunities to deliver genuine hospitable service (Drexler & Beckman Lapré, 2019; Touni & Magdy, 2020; Ivanov & Webster, 2020). Also, they could help the hotel managers to gather and analyze guest behavioral trends and thus to refine its services and offerings (Gupta et al., 2022). Using these systems could reduce cost of human labor, grow in sales, and develop facility management. Furthermore, these technologies allow guests to register themselves

automatically, removing the need for transactions at the reception, and connect with the hotel 7/24 by utilizing their native languages.

METHODOLOGY

Reducing labor costs is the most common reason for using robotic technologies (Gursoy et al., 2019; Li et al., 2019; Ivanov et al., 2020; Choi et al., 2020; Ayyildiz et al., 2022). This study aims to examine what labor costs are and whether these costs encourage hotel managers to accept using robotic technologies as discussed at literature. For fulfilling the aims of the study, the qualitative approach based on in-depth interviews are adopted with the frontline managers working in Antalya. An interview provides a deep understanding of a concept or subject and extracting more detailed information (Touni & Magdy, 2020). With the semi-structured interview, hotel managers have been allowed to explain all their experiences about human resources activities and employee behaviors affecting guest satisfaction.

Preparing the Questions   **Conducting the Interviews**   **Performing the Analysis**

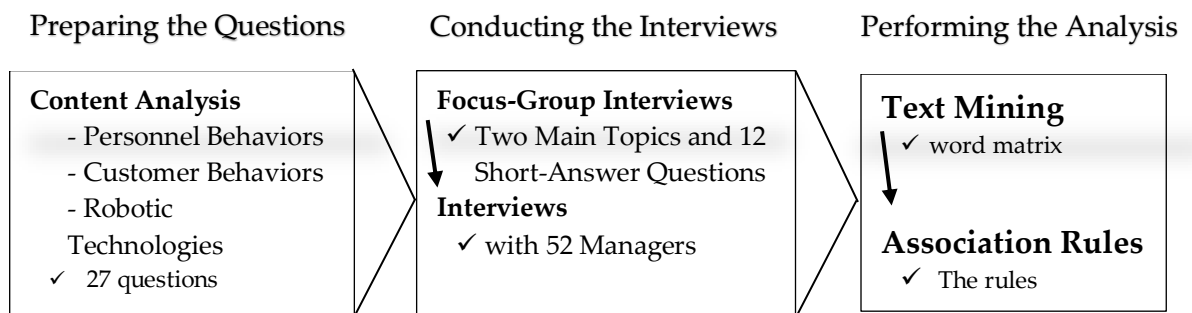| **Content Analysis**	**Focus-Group Interviews**	**Text Mining**
- Personnel Behaviors	✓ Two Main Topics and 12 Short-Answer Questions	✓ word matrix
- Customer Behaviors	**Interviews**	
- Robotic Technologies	✓ with 52 Managers	**Association Rules**
✓ 27 questions		✓ The rules

Figure 1. *The phases of the study*

The study comprises three phases (see Figure 1). First, content analysis was conducted to thoroughly review the literature on personnel behaviors that effect customer satisfaction, customer complaints and behaviors and robotic technologies on hospitality industry. The articles have been found by using following advanced queries at google scholar. First: (((("personnel" OR "staff" OR "employee" OR "human labor") AND ("hotel" OR "hospitality" OR "accommodation") AND ("problem" OR "behavior" OR "challenges" OR "complaint"))), Second: (("Robotic" OR "AI" OR "Artificial Intelligence" OR "Robot") AND ("hotel" OR "hospitality" OR "accommodation")). At this phase, an interview form consisting of 27 questions was prepared after relevant literature was reviewed.

During the second phase, focus-group interviews with managers from various departments were conducted to generate themes relating to actions done to empower staff and behaviors affecting customer

satisfaction. Following face to face interviews with 12 managers, the interview form was revised within the framework of the information obtained. It has been transformed into an interview form that has two main interview topics (human resource practices, staff, and guest behaviors) and seeks answers to 12 short-answer questions, consisting of demographic information related to hotel and employee, and robotic recruitment. Then, interviews were held with 52 managers and each interview was recorded simultaneously with the participants' permission. Frontline managers are interviewed, who are the link between most human resources management policies and practices and the frontline staff that they deliver the majority of the service experience consumed (Madera et al., 2017). Managers recruited for the interviews were from different departments (e.g., F&B, front office, and housekeeping) in different hotels (not using robotic technologies) to ensure data were representative and validity reflecting the trustworthiness of the results.

Last phase of the study is analyzing the text-based data to discover behaviors and human resources activities (see Figure 2). However, extracting, and aggregating information from text-based comments is not an easy task due to their unstructured format. In order to explore the relationships and patterns in the interviews with the managers, text analysis was done to transform unstructured text into structured data. The study model was run twice, for analyzing expenditure for human labor first and then for behaviors.

The pre-processing is performed to improve the quality of the reviews to achieve better results to remove special characters, and digits, unicode characters. First uppercase letters were converted to lowercase letters, thus, the capital and lower-case letter problem in word groups has been eliminated. Then the sentences and paragraphs were tokenized into smaller units, such as individual terms or words. Lastly stop words such as "a", "the", "with", "and", "or", etc. were removed. Also, the words whose frequency is less than 5 times were eliminated.

After pre-processing the reviews, pre-processed reviews were converted into a set of linear features by using Term Frequency-Inverse Document Frequency (TF-IDF) vectoriser. The TF-IDF vectoriser, weighting factor, captures a word's importance in a collection of reviews. The word frequencies obtained by the text analysis were converted to a feature, and a word matrix was created from the features. Fp-Growth algorithm was used to obtain association rules from the word matrix. The FP-Growth algorithm

is an efficient algorithm for calculating frequently co-occurring items in a transaction database (Rapidminer, 2023).
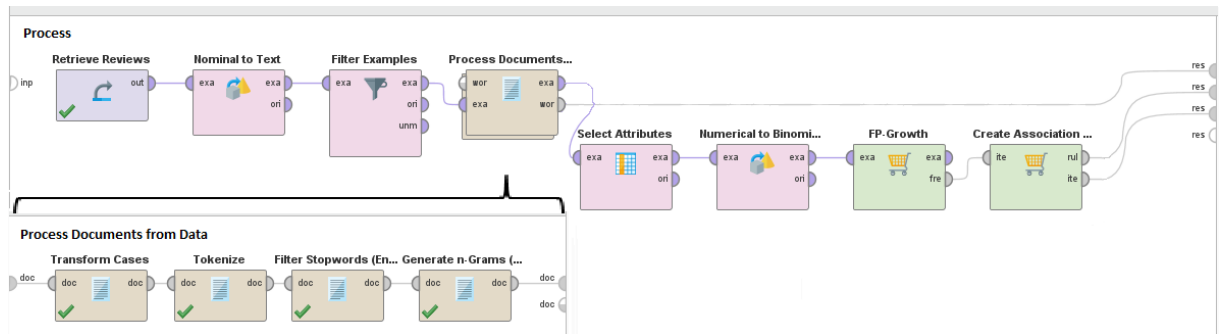

Figure 2. *The study's Rapidminer Model*

Association rule algorithm is commonly used to discover interesting relationships or associations that exist between the specific values of categorical variables in large data sets. It is used to uncover hidden patterns mostly in purchases to predict consumers' future suggestions and purchases. For instance, customers purchasing excursion/package A, often also order package B, and C or consumers complaining from A subject also frequently complain about issue B but are happy with issue C. Likewise the study used association rule algorithm to reveal the subject B, C, and others that managers addressed along with issue A. Association rules are created for frequent if/then patterns by analyzing data and using the criteria confidence and support to identify the most important relationships. Support is an indication of how frequently the items appear in the dataset. Confidence indicates the number of times the if/then statements have been found to be true (Rapidminer, 2023). The rules were filtered and sorted by confidence, and only rules that have a confidence over than 0.80 were retained.

The words that emerged with the word frequency analysis were subjected to the association analysis to reveal association rules of the words used together in the managers' comments. Thus, the expenditures made by the managers for the personnel and the frequency of the words in the comments regarding the employee behavior were determined by the trust parameters, and the expenses of the managers and the employee behaviors. By utilizing the model, 10 association rules were generated for the expenditures made by the managers for the personnel and 20 association rules for the employee behavior affecting the customer satisfaction.

FINDINGS

Frontline managers (Human Resources (2), Guest Relations (5), Front Office (12), Food & Beverage (18), Sales (4), Reservation (5), Animation (6) working in 10 different hotels operating in the Antalya region participated in the study. The managers interviewed within the scope of the study work in large class hotels. Hotels have capacity of average of 536 rooms, 1720 pax and 486 staff. The ratio of those who received tourism training among the employees in the hotels was 32%. In addition, only 17% of the employees of these hotels, which host guests from almost every country, can speak one foreign language perfectly.

The activities carried out by the business in order to train and empower the personnel in order to provide better quality of services at the hotel were discussed and information was obtained from the managers. Two themes were revealed for human labor cost including the expenditures of the enterprises for the personnel and the activities done to strengthen and motivate the personnel (See Table 1). Managers expressed the consequences of guest and employee behavior in four different themes including complaint, gripe, trust, and problem (See Table 2).

Table 1. *Association Rules for HRA*

Rule	Antecedent c	consequent	Support	Confidence	Lift
1	Transportation	Expenditure	0,250	1	3,059
2	Overtime	Expenditure	0,231	1	3,059
4	Bonus	Expenditure	0,308	0,941	2,879
5	Lodging	Expenditure	0,231	0,923	2,824
7	Reward	Expenditure	0,288	0,882	2,294
9	Infirmary	Expenditure	0,231	0,857	1,783
3	Training	Activities	0,250	1	3,059
6	Personnel Nights	Activities	0,212	0,917	2,072
8	Celebrations	Activities	0,269	0,875	1,517
10	Events	Activities	0,250	0,812	2,224

Expenditure

Managers provide transportation to come to work and go back home, and additionally lodging for the employee not having any accommodation facilities in Antalya. In addition, managers pay more to employees working overtime, share guest tips, give bonus, and provide infirmary service for some minor illness.

Table 2. *Association Rules for Behaviors*

Rule	Antecedent	Consequent	Support	Confidence	Lift
3	Responses	Complaint	0,288	0,957	1,733
9	Fudge	Complaint	0,269	0,875	1, 896
10	Waiting	Complaint	0,269	0,875	1,517
11	Personnel	Complaint	0,231	0,857	1,486
1	Workload	Gripe	0,288	1	2,080
5	Dissatisfaction	Gripe	0,423	0,917	1,589
6	Question	Gripe	0,212	0,917	1,589
8	Requirement	Gripe	0,346	0,900	1,872
13	Fatigue	Gripe	0,212	0,846	1,760
17	Personnel	Trust	0,327	0,810	1,684
7	Work Quality	Trust	0,212	0,917	1,589
14	Neglecting	Trust	0,288	0,833	1,733
15	Reasons	Trust	0,250	0,812	2,224
20	Check	Trust	0,231	0,800	1,809
2	Service Failure	Problem	0,212	1	2,080
4	Language	Problem	0,308	0,941	2,879
12	Resignation	Problem	0,231	0,857	1,783
16	Absenteeism	Problem	0,250	0,812	2,224
18	Recruitment	Problem	0,327	0,810	1,684
19	Communication	Problem	0,231	0,800	1,809

Activities

While all the managers emphasized that they provide training to their employees, few mentioned staff empowerment, motivation, and orientation activities. The personnel celebration is the common action taken by the hotels to relieve the physical and mental fatigue of the employees. Spending time outside of the hotel, meditating, departmental activities, sport events, dinner events, motivational rewards, birthday celebrations, creating a friendly atmosphere are other activities. Activities that managers do to increase human labor quality are almost the same, with a few exceptions for spirituality supports.

Staff Gripe

Employee gripes expressed by managers vary according to departments while all employees gripe about workload. For example, while employees of the guest relations and concierge department do not complain about the questions of the guests, especially the employees of the food and beverage department gripe about the requests and questions of the guests. Managers expressed that employees complained about excessive workload, guests' expectation of information about all destination and attractions, and

unnecessary dissatisfaction of the guests. Interestingly, the managers reported that the employees complained about the guests and requirements than the guests do.

Trust

One of the problems of managers is that they cannot trust their employees in the work they do and the reasons they put forward. Managers are unsure about employees in terms of doing the tasks on time and with high quality without neglecting. They think that they need to check the tasks done by employees.

Problem

Another theme emerging from the comments is the behavior of the personnel, which turns into problems that need to be solved for the managers. According to the managers, it is most likely that the employees exhibit behaviors that will cause service failure. Managers stated that the main problems they experience with their employees are that they leave work untimely, lack the understanding of a foreign language to communicate well and they make mistakes.

Working with Robots

All of the managers said "Yes" as an answer to the questions that is "Can an employee who you think is meticulous in her/his work mistakenly commit erroneous actions"? Seven of the managers answered "yes", 10 said "maybe" and 35 answered "no" to the question asking them if they believe to solve humanitarian problems (fatigue, exhaustion, illness, carelessness, foreign language, etc.) by using a robot.

Only five managers, three from front office and two from guest relation department, think to work with robots, seven of them (from Sales and F&B department) has no idea and 40 managers reject working with robots. Interestingly some of the managers who think to work robots don't think that robotic technologies cannot be solution for humanitarian problems.

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CONCLUSION

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The aim of every hotel is to provide the highest quality service and to have satisfied and loyal customers. Hotels should have to qualified human

resources to get that objective. Hotel management should recruit reliable staff and train them in the best possible way (Kavurmacı & Demirdelen, 2015). However, finding reliable and quality staff who will provide quality service and training the employed ones is difficult specially for peak seasons due to seasonality, cheap mobile labor, and untrained workforce (Baum, 2015). Furthermore, activities carried out to develop human resources and services such as salary, insurance, lodging, food provided to personnel are important expenses for organizations. In order to reduce this cost, to provide a standard service quality and improve the guest experience, hotel managements have started to use robotic technologies by streamlining processes and speed up tasks traditionally run by frontline service employees (Li et al., 2019).

The study first derived the cost of human labor for the hotels and employee behaviors during the service encounters. Behaviors reveals the study such as absenteeism, recruitment problems, causing service failure (poor services) are nearly the same managers reported in Poulston (2009)'s study. The objective of the study is to discover whether the managers, who have to face the issue caused by their employees' being human and the problems they cause, want to use robots to solve these problems. In order to achieve this aim, structured interviews were conducted with 52 frontline managers working in hotels operating in Antalya about human resources practices, employee-guest behaviors and robotic employment. Common human resources activities and personnel behavior pattern were determined by making association rules analysis with the words obtained by text mining. Managers' human resources activities are to provide lodging and transportation, to pay more for greater effort, to train, to organize some activities to relieve the physical and mental fatigue of employees. Behaviors that employee exhibit are not to answer guest' questions and demands, not doing their job meticulously, causing service failures, resignation, to complaint about the workload.

It was determined from the interviews that the managers faced human problems and even felt obliged to control their work because they could not trust the employees, but they believed that these problems could not be solved by usage of robotic technologies. Contrary to the literature (Ivanov & Webster, 2017; Kılıçhan & Yılmaz, 2020), 35 of 52 managers stated that robots would not be the solution to these problems, although they accept that even the most qualified and reliable personnel can make mistakes and cause service failures. Interestingly, supporting this view, a recent study (Fu et al., 2022) reported that implementation of service robots increased respondents' both workloads and the level of time pressure.

The result obtained from the manager's interviews is consistent with the result obtained by Ivanov et al. (2020)'s study that managers they interviewed reported they did not intend to implement robotic technology in their hotels due to various reasons. Similarly, the word "robot" is cold for most interviewees of Dogan and Vatan (2019) and employment of robots is still early, because of the nature of the hospitality industry. Seyitoğlu et al (2021) revealed that Turkish restaurant managers have mostly negative attitudes towards robots, even they agree that robots improve service quality, and employees are not ready to work with robots. Çilingir Ük et al. (2023) found that the participants preferred using any kind of robot only for 11 of the 36 positions. Similarly, future's professionals also do not have a strong will to implement service robots (Ivkov et al., 2020), their perspective on robot usage is still reticent (Carvalho et al., 2022) and they have mixed feelings about their usage in organizations (Kala, 2022). Contrary to these studies, Pizam et al (2022) provides evidence that there is a general support among hotel managers to adopt robotic technologies in their hotels. Touni and Magdy (2020) found that IT managers had a more positive attitude towards robots.

The reason for the negative opinions of the participants may be that they do not have a clear knowledge and experience about the contribution of the related technologies to the business and its employees as reported in Gupta et al.'s (2022) study. Thus, Vishwanath et al (2019) reported that after around one month, the staff were optimistic about the potential roles accomplished by social robots. IT managers who have enough knowledge about robotics have positive attitude towards robots (Touni & Magdy, 2020). These studies show that if employees closely identify, they welcome social robots to help customers with simple tasks and do not feel the fear of being unemployed. Similarly, Pizam et al (2022) provided strong evidence that top management support was one of the significant predictors of hotel managers adoption intention. Hotel staffs keen to work with artificial intelligence as long as hotel management supports (Koo et al, 2021) and the consequence of turnover intentions caused by artificial intelligence was weakened when high organizational support was perceived (Li et al., 2019). The participants in Choi et al. (2020)'s study stated that they would consider service robots if they can communicate with guests and cope with exceptional circumstances. These findings show that managers do not have enough knowledge and experience in robot employment, so they do not dare to be afraid of failure, and they need support and experience in robotic technologies as stated by Fu et al. (2022).

Theoretical Contributions

The study provides several theoretical contributions to the literature related to robotic technology adoption in the hospitality industry. First, while researchers have a general interest in hospitality service robots, studies have been mostly conducted from customer's perceptions and manager's opinion has remained relatively unknown (Ivanov et al., 2020). None of the few studies dealing with managers' views asked hotel frontline managers what they think about solving humanitarian problems lived in the hotel with robots. The study reveals opinion of the manager, the ultimate responsible and manager of daily activities in the hotels, to recruit robotic technologies in terms of reducing the cost of human labors and solving humanitarian problems. Researchers have so far not paid sufficient attention to the impact of robotic technologies on service managers and employees; however, attitudes and perceptions of frontline managers have the downstream impacts on service levels. If the frontline managers resist the use of robotic technologies or if it is imposed despite the frontline managers, these technologies could ultimately have a cumulated negative impact on guest satisfaction, therefore hotel performance.

Second, a manager's mindset is critical for a successful robotic investment, and the applications would be inconceivable without their assistance. According to the technology acceptance model, one of the reasons a person accepts new technologies is because they believe that technology is useful (Gursoy et al., 2019). In the literature, evidence is presented about the contribution of the use of robots to a standard and error-free service delivery and especially to frontline employees. However, the results showed that managers did not agree with the researchers, that's why they will have to provide more compelling evidence to convince. Although several studies have been conducted to explore user resistance, researchers have yet to explore staff resistance to service robot recruitment in the hotel context (Fu et al., 2022).

Additionally, this study adopted text-mining techniques to have more comprehensive opinion about HRA and employee behaviors, and association rules analysis to reveal common activities and problems, eventually reveal cost of human labor from the perspective of the manager that had not been conducted in previous studies. Similar studies such as Dogan and Vatan (2019), and Kala (2022) were employed thematic analysis to explore the perception and opinions of respondents and figure out the differences and similarities in insights provided by participants. This study preferred artificial intelligence methods. It is also unique in this aspect.

Practical Contributions

The study has considerable practical implications for hotel managers and investors. Robotic technologies are expensive systems so that they must be accepted by not only the guests but also employees, managers, and hotel organizations at a cultural level, as a new form of interaction and service delivery (Carvalho et al., 2022). For business processes in a hotel to be carried out successfully by robotic technologies, new managerial mindsets are required (Ivanov, 2020). Hotel executives should be aware of attitude of employee towards robots because the employees' cooperation with the robots will also entail the success of the operation (Carvalho et al., 2022).

From a managerial perspective, the results may help policy makers in terms of employment robotic technologies in hotels' daily operations. Today's service delivery systems nearly are depending on new smart technologies such as artificial intelligence and robotics. In order for Turkish tourism to effectively implement new technologies, the manager's perspective on these technologies is critical. Therefore, executives should take the necessary precautions against the possible resistances of frontline managers. Studies have shown that managerial and organizational support (Li et al., 2019) are more moderate towards employee robot employment. While there is a consensus in the literature that robotic systems will reduce the workload of the employees and labor cost, provide 24/7, uninterruptedly, consultancy services to the guests, the fact that managers believe just the opposite demonstrates that there are many more problems to be solved in robotic employment. In addition, despite the advantages of using robots and external pressure, although they will likely encounter related technologies in the future, do not want to work with robots. In terms of tourism policies and planning, frontline managers can be empowered for better future visions and healthier decisions to use robotic technologies (Kılıçhan & Yılmaz, 2020). Furthermore, hospitality management curriculum could be enhanced by adding AI-related subjects into education systems to assist and train pre-employees to become artificial intelligence leaders of the future hospitality industry (Koo et al., 2021). To avoid being left behind, future employees and managers should be provided opportunities to learn, experience and prepare for the future's work that will be shaped by adoption of the artificial intelligence.

Limitations of the Research

The study's findings cannot be generalized due to limited interviewed 52 frontline managers do not deal with robotic technologies from different

five-star hotels in Antalya. However, the perspectives of managers working in one of the most preferred destinations of the world tourism are significant in terms of expressing the views of the Türkiye's hotel industry.

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