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HOTEL EMPLOYEES' PERCEPTIONS TOWARD HUMAN-ROBOT CO-WORKING BASED ON THE INDUSTRY 5.0 CONCEPT: A QUALITATIVE APPROACH

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Abstract. The tremendous development of information technology and artificial intelligence led to rapid changes in business. This progress led to the outbreak of industrial revolutions, including the fifth industrial revolution or Industry 5.0. The most crucial mission of Industry 5.0 is human-robot collaboration to maximize the benefits of both. Many studies have evaluated the role of robots in the hotel business and their effectiveness in achieving customer satisfaction and improving service quality. However, empirical studies regarding human resources are limited. Therefore, this study aims to investigate hotel employees' perceptions regarding co-working with robots and the effects of robot introduction on employee well-being. The research depends on semi-structured interviews with workers from upscale hotels in Yekaterinburg, Russia. The results showed that employees tend to have a positive attitude toward service robots. In addition, employees were aware of the advantages and disadvantages of service robots and the aspects that could affect their well-being as a consequence of working with robots. The study proposes practical implications for hotel management and further research for academics.

Keywords: industry 5.0; employee-robot co-working; hotel business; service robots; employee well-being.

JEL codes: M12; I31; O33.

Introduction

The emergence of advanced technology has increased in all sectors, which has led to changes in societies and work structures. Due to this transformation, the pressure increased market

competition, forcing organizations and business owners to consider keeping up with business advances (Li et al., 2019). The concept of Industry 5.0 is approached from different angles. Some research indicates that whereas Industry 4.0 emphasizes smart manufacturing and merging devices, Industry 5.0 is more concerned with human-robot cooperation in the work area. Consequently, human-robot engagement will provide several advantages and increase the distinctive human touch on operations rather than the identical automated output (Özdemir & Hekim 2018; Demir et al., 2019).

Industry 5.0 brings many benefits to the hotel sector, including personalized service, an effective supply chain, an intelligent environment, adaptability, and system integration to deliver current information on customer desires, leading to customer loyalty and perceived value (Alvarez-Aros & Bernal-Torres, 2021). Every guest is unique and expects personalized service, which hotel staff should deliver. Therefore, industry 5.0 may reduce the incidence of work-related injuries and concentrate on value-added tasks that need the participation of human brainpower. While robots take responsibility for the tedious, routine, and physically demanding tasks, humans can focus on higher-order cognitive processes, including analysis, decision-making, and creativity, resulting in more highly personalized services (Pillai et al., 2021; Ghazy & Fedorova, 2021).

Service robots and automation are already employed to provide various front-of-house activities and back-of-house production jobs in hotels and restaurants. Hotels have started using self-service terminals so visitors can check in and out independently, reducing the workload for front desk employees. The robots can undertake various tasks, including providing concierge services, delivering packages, carrying bags, dishwashing, cooking, giving information, and cleaning (Ivanov et al., 2017; Zhong et al., 2020). Henn-na Hotel, operating in Nagasaki, was the first hotel where all employees were robots. A robot called A.L.O. helps deliver amenities like shampoo and soap to guest rooms and collects used linens for washing at the Aloft Hotel Cupertino. Unlike humans, robots can work at any time of day or night without getting tired or complaining (Samala et al., 2020; Reis et al., 2020).

The academic community has submitted many studies to meet the needs of companies for more research on service robots in the tourism and hospitality sectors (Qiu et al., 2020; Kuo et al., 2017; Collins, 2020; McCartney & McCartney, 2020; Seyitoğlu & Ivanov, 2020). Studies have focused on what the attraction of service robots is and how they impact customers reactions (Park et al., 2021), the effect of service robot characteristics on guests' hospitality experience (Qiu et al., 2020), customer perceptions on the implementation of service robots in hotel operations (Ivanov et al., 2018), The influence of perceptions on robot use intention (Meidute-Kavaliauskiene et al., 2021), customer interactions with robots (Huang et al., 2021). Most studies concentrated on guest perception and evaluated aspects of human-robot interactions from the customer's perspective (Chi et al., 2020; Ivanov et al., 2020). Service robot implementation cannot be effective unless the needs and

advantages of both customers and staff are considered. Therefore, this study aims to examine the perception of hotel employees towards collaborating with robots and the impacts of robots' introduction on employees' well-being.

1.   Literature Review

1.1. The concept of Industry 5.0

Industry 5.0 is considered a revolution in which humans and machines collaborate to increase production methods and efficiency. Furthermore, the human elements and technology in the production process are the main emphasis of Industry 5.0, which is driven by a wide range of industry technologists and ideologies. In other words, Industry 5.0 supplemented the industrial revolution with human-centric, resilient, and sustainable values. It will transform global production processes by eliminating repetitive jobs performed by humans (Javaid et al., 2020; Adel, 2022).

The goal of Industry 4.0 is to increase mass production by using machine learning to provide intelligence across devices and applications. While Industry 5.0 proposes a strategy for businesses that extends beyond the views of productivity and efficiency as the primary goals but enriches the function and value of the industry in society. The industry 5.0 concept sets employee well-being at the core of the manufacturing operation (Alvarez-Aros & Bernal-Torres, 2021). It employs innovative technology to provide prosperity beyond employment and development while respecting the production restrictions of the planet. Industry 5.0 is anticipated to combine high-speed, sophisticated machines with the cognitive, rational thinking of people. In this framework, the business may actively address issues such as resource conservation, social stability, and global climate change (Sindhwani et al., 2022; Xu et al., 2020).

Another significant addition of Industry 5.0 is mass personalization, which enables customers to get personalized and customized services based on their preferences and requirements (Özdemir & Hekim 2018). Industry 5.0 will dramatically boost operational efficiency and develop adaptability between people and machines, allowing for interaction and ongoing monitoring responsibilities. The objective of the cooperation between humans and robots is to accelerate operations. By delegating monotonous and repetitive activities to machines or robots and critical thinking tasks to humans, Industry 5.0 can improve production quality (Orlova, 2021; Maddikunta et al., 2022).

1.2. Service robots in the hospitality industry

The name "robot" originated from the Czech word "robota", which refers to forced labor. Although the term was initially meant to refer to foolish machines that execute minor, routine tasks, it now refers to intelligent humanoid robots in contemporary society (Meidute-Kavaliauskiene et al.,

2021). A robot can be defined in a variety of ways. According to the traditional definition, *"a robot is a machine that senses, thinks, and acts"* (Bekey, 2005, p.2). According to the International Federation of Robotics (IFR), "a service robot performs functional tasks for humans or equipment, excluding industrial automation applications" (IFR, 2016, p. 9). According to Bowen and Morosan (2018, p.2), "Service robots are physically embodied artificially intelligent agents that can take actions that affect the physical world". By 2030, the McKinsey Global Institute estimates that between 400 and 800 million of today's occupations will be automated (Bowen & Morosan, 2018).

Robots have long been improved by artificial intelligence to deliver effective human services. Consequently, robotic and service automation technologies have impacted several aspects of hotel operations. This progress includes the emergence of robots that prepare multiple dishes and robots can serve guests. In the USA, a company in California produced a fast-food robot capable of fulfilling 120 orders in an hour. On the other hand, Café X has developed robot baristas who can produce up to three drinks in 40 seconds (Bowen & Morosan, 2018; Tuomi et al., 2021). The food technology industry, particularly restaurant robots, is attracting significant attention and investment in the United Kingdom. The first hotel in the world to employ humanoid robots to serve guests is Japan's Henn-na Hotel. The dinosaur robot and the female humanlike robot are two of Henn-na Hotel's most well-known robots. They assist customers with check-in and respond to questions at the front desk. Other robots employed by the hotel include robots that deliver baggage to guest rooms, other robots that operate in the cloakroom, and robots that work as cleaners (Alexis, 2017; Reis et al., 2020). In addition, the in-room robot assistant responds to voice commands by guests to adjust the temperature, lighting, television, etc. On the other side, a robot called A.L.O. helps deliver amenities like shampoo and soap to guest rooms and collects used linens for washing at the Aloft Hotel Cupertino. It seems to be a staff member wearing a uniform and displaying a name tag (Samala et al., 2020; Çakar, & Aykol, 2020).

The adoption of robots in the hospitality industry would have a notable impact on its operations. Robots can work for long periods without fatigue or exhaustion and achieve many benefits in the work environment. Harmonious collaboration between humans and robots makes it possible to achieve productivity and improve employees' well-being. Robots contribute to overall well-being by allowing employees to concentrate on more fascinating and satisfying responsibilities. Doing meaningful work increases job satisfaction and worker well-being (Smids et al., 2020). When planning tasks between humans and robots, the optimal pairing between workers and robots should be considered, which leads to achieving efficiency and productivity while reducing workload and stress on humans. The safety issue is essential in cooperation to protect employees from accidents. This will affect the state of sustainability by reducing work burden and establishing a meaningful, healthy, and enjoyable work environment (Tsarouchi et al., 2016; Lin & Lukodono, 2021).

Despite the global application of artificial intelligence technology in hospitality services, studies are limited, particularly regarding employees. Ivanov et al. (2018) surveyed Russian consumers to discover how young Russians perceive the employment of robots in hotels. This research demonstrated that there are variations in how people evaluate innovative technology. Humans will either accept or reject the adoption of such technology, and their acceptance or rejection will differ from one person to another. Based on online reviews from YouTube, Yu (2019) examined individuals' perceptions of robots working in hotels and found that people are more likely to have negative impressions of robots. Meidute-Kavaliauskiene et al. (2021) evaluated the degree to which hotel guests are aware of the benefits and disadvantages of robots and how this affects guests' intentions to use robots. The results discovered that the awareness of benefits and perceived value have a positive and significant impact on the willingness to deal with service robots. It has been shown that the awareness of disadvantages has a negative and significant impact on the intention to deal with service robots.

As previously mentioned, the majority of studies concentrated on guest perception and evaluated aspects of human-robot interactions from the customer's perspective. Employees' attitudes regarding working with robots and their influence on employees' well-being have received little attention from researchers. Employees are those who will interact directly with robots. If they refuse to interact with the robots or consider them a risk to their jobs, this will negatively affect the success of employing robots in hotels (Chi et al., 2020; Ivanov et al., 2020).

2.   Methodology

2.1. Sampling techniques

The study employed non-probability purposive sampling, in which the researcher chose a sample based on individuals' familiarity with the research topic. To ensure transparency while selecting the interviewers, the participants were fully informed of the research's purposes. Data were collected through 20 interviews with hotels employees in Ekaterinburg, Russia. The study concentrated on four- and five-star hotels since luxury hotels are usually the first to employ recent technologies and innovations in the hospitality industry. Table 1 shows the age, gender, and job status of the hotel workers who took part in the study. According to the table, around 60% of the participants were females, while 40% were males. 45% of the participants interviewed were aged 25 or younger. The proportion of workers interviewed between the ages of 26 and 35 is 45%. The majority of participants (75%) had a bachelor's degree. Moreover, 35% of the staff interviewed work in the front office, and 60% of the interviewees have a work experience ranging from 1 to 5 years.

2.2. Data collection and analysis

The research employs semi-structured interviews, which provide a more inductive approach and freedom since respondents were asked to respond with fewer restrictions (Galletta, 2013). An interview is a valuable qualitative data-gathering approach for obtaining more specific information or an extensive understanding of a topic or idea. In an in-depth interview, respondents are directed to provide detailed answers regarding the subject under discussion (Srivastava & Thomson, 2009; Alshenqeeti, 2014). The interview questions used in the study were developed based on relevant previous literature. Three academics were consulted to review the interview questions. The final interview form was designed based on the experts' recommendations. Twenty face-to-face, semi-structured interviews with employees were conducted from September to November 2022. Each interview lasted between 25 and 37 minutes, and the interviews were recorded with the participants' permission. All the participants' answers were transcribed and directed to a thematic analysis since the thematic method allows for more flexibility in data interpretation. After that, the contents were read and reread, and the main ideas were identified. Then the relevant responses that fit the research questions were selected. Lastly, the themes were formulated and summarized to conclude the results according to the study objectives.

Table 1: Participants' characteristics[1]

Participant No.	Gender	Age	Education	Experience	Department
P1	Female	24	Bachelor's degree	3	Front office
P2	Female	31	High school	6	Housekeeping
P3	Male	26	Bachelor's degree	4	Front office
P4	Female	34	Bachelor's degree	10	Food & Beverage
P5	Male	30	Bachelor's degree	9	Food & Beverage
P6	Female	25	Master's degree	4	Marketing
P7	Female	22	Bachelor's degree	1	Front office
P8	Male	33	Bachelor's degree	9	IT
P9	Male	29	Bachelor's degree	7	Concierge
P10	Female	29	High school	11	Room service
P11	Male	26	Bachelor's degree	5	Marketing
P12	Female	36	Bachelor's degree	13	Housekeeping
P13	Male	28	Master's degree	5	Front office
P14	Female	22	Bachelor's degree	2	Front office
P15	Female	25	Bachelor's degree	4	Housekeeping
P16	Male	39	High school	14	Security
P17	Male	24	Bachelor's degree	4	Front office
P18	Female	24	Bachelor's degree	3	Marketing
P19	Female	21	Bachelor's degree	1	Front office
P20	Female	25	Bachelor's degree	4	Food & Beverage

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[1] Author's elaboration

3. Results

Table 2 shows the results obtained according to the thematic analysis of the employees' answers to the question, "Could you please describe your feelings towards robots?". More than half of the respondents (55%) have positive feelings towards robots, as they feel that they are enjoyable, good, and interesting, in addition to the fact that robots are an example of development and innovation that will have a role in making our lives easier and more comfortable. On the other side, 45% of respondents have negative feelings towards robots, such as anxiety, boredom, isolation, emotionless, and fear of the extent of the development of robots in the future.

Table 2: Employees' attitude towards robots[2]

Evaluation	Keywords	Quotes
Positive	Super interesting, enjoyable, good, fun, innovation, excitement, comfort, development, easiness	*"Thinking about robots feels fun and super interesting for me."* *"We live today in an era of huge technological progress and our lives are full of technology we cannot live without it, and robots are a kind of innovation and technological development."* *"Robots are very smart devices that can move and take action, and I think dealing with them will be a good and enjoyable experience."* *"I am not against robots; I know they will make our lives easier and more comfortable."*
Negative	Boring, wired, feel lonely, confusing, scary, isolated, depressing, anxious, emotionless	*"It feels a bit emotionless and isolated."* *"When I think of robots, I imagine an unknown world that invites anxiety and scary."* *"It feels so weird." "It sounds boring."* *"It feels really empty, and it lacks warmth."* *"Imagine 20 years from now and how advanced and improved these robots will be. It's scary to think about this life and work situation."* *"I think it looks like such a confusing and depressing environment. It's nice seeing all the people around me."*

The following findings were obtained according to the thematic analysis of the employees' answers to the question, "What do you think about the impact of robots' introduction in the hotel business?". The results identified four levels of impact related to the robots' introduction. The first level is the impact of robots' introduction on the hotel. It has different themes, such as enhancing hotel reputation, increasing productivity, achieving competitive advantage, increasing demand, and keeping pace with progress. Themes under the impacts of robots' introduction on operation, which is the second level, are providing standard services, decreasing employees' costs, decreasing errors, quick services, improving service quality, and enhancing the work environment. In addition, the themes under the impacts of robots' introduction on human resources, which is the third level, are reducing workload, partial reduction of staff, requiring new skills, and dominating many jobs. The last level is the impacts of robots' introduction on the customers, and it has different themes, such as providing guests with new experiences and customer satisfaction (see Table 3).

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[2] Author's elaboration

Table 3: The potential impacts of robots' introduction[3]

Levels	Themes	Quotes
On the hotel	Enhancing hotel reputation, increasing productivity, competitive advantage, increasing demand, keeping pace with progress	*"Of course, the introduction of robots in our hotel will have effects in several directions. For example, it will improve the hotel's reputation and create a competitive advantage, which will increase the hotel's reservations."* *"It is suitable for our business to keep pace with new technology to satisfy guests."* *"Robots will take over many tasks, allowing us to serve a large number of guests."*
On the operation	Providing standard services, decreasing employee costs, decreasing errors, quick services, improving service quality, enhancing work environment	*"I think they will help us to provide standard and high-quality services in addition to minimizing errors."* *"The introduction of robots can also help reduce employees' costs, as they do not require long vacations, daily meals, incentives, overtime, etc."*
On the human resources	Partial reduction of staff, requires new skills, dominating a lot of jobs, reducing workload	*"I see that robots will control many positions, but I think that they cannot provide the service without the human element, especially in hotels."* *"I assume that the number of workers in each department will decrease, and we will need more training in dealing with robots."* *"From my point of view, the introduction of robots is a double-edged sword, on the one hand, they will reduce workloads, and on the other hand, they will control many jobs."*
On the customers	New experience, customer satisfaction	*"Also, this will lead to guest satisfaction by providing a new experience."*

As mentioned in Table 4, there are three categories of potential advantages that robots can deliver, formed by the employees' responses to the question, "What are the potential advantages of co-working with robots?". The first category is the work-related advantages of co-working with robots. It has several themes, such as roles being assigned accurately, working a long time, reducing workload, reducing errors, increasing efficiency, creating a fun environment, and performing routine tasks. The themes under "social aspects," which is the second category regarding the advantages of co-working with robots, are reducing usual social problems between employees, no mood fluctuation, and eliminating bad competition. The third category, employee-related advantages of co-working with robots, includes different themes such as learning new skills, freeing employees up from a lot of tasks, and working with smart assistants (see Table 4).

Table 4: Potential advantages of co-working with robots[4]

Category	Themes	Quotes
Work-related advantages	Roles assigned accurately, working a long time, reducing workload, reducing errors, increasing efficiency, fun environment, perform routine tasks	*"Working with robots will give each of us specific tasks, leading to accurately defining my responsibilities."* *"Robots will be able to work for long times with high efficiency and without errors."* *"They will handle a lot of routine work...also, working with such robots will make the work environment more fun."*
Social	Reducing usual social problems, no mood	*"Many of the usual social problems between colleagues will be reduced.........there will also be fewer complaints from workers against each other."*

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[3] Author's elaboration

[4] Author's elaboration

Category	Themes	Quotes
	fluctuation, eliminating bad competition	*"They do not have mood changes at work.........they do not get frustrated."* *"It's safe to assume that robots will not try to cause me trouble at work."*
Employee-related advantages	Learning new skills, freeing employees up from a lot of tasks, working with smart assistants	*"Robots could help us ease the burden, freeing us from many tasks so we could devote more time to other tasks."* *"For me.... I think one of the best benefits is that I would work with smart assistants so I could learn new things."*

Table 5 presents the findings from the thematic analysis of the employees' answers to the question, "What are the potential disadvantages of co-working with robots?". The results identified five categories of potential disadvantages of co-working with robots. The first category is social issues, and it has several themes, such as lack of emotions, feeling bored after a long time, soullessness, and toxic dependency on AI. The themes under "technical issues," which is the second category, are malfunctions, software glitches, lags, freezing, and not responding. The third category is communication issues related to co-working with robots. The themes under this category are difficulties in communicating well, difficulties in interaction and engagement, and difficulties in understanding special requests. Moreover, the themes under unemployment, which is the fourth category, are loss of jobs, minimizing the number of employees, and robotization. The last category is security issues. It has two themes: hackers and data security risks (see Table 5).

Table 5: Potential disadvantages of co-working with robots[5]

Category	Themes	Quotes
Social issues	Lack of emotions, feeling bored after a long time, soullessness, toxic dependency on AI	*"They do not have a soul or real emotions......if I spent much time with robots, I would feel bored."* *"This may seem innovative from a technological aspect, but in my opinion, it creates a toxic dependency on AI and takes us away from our peaceful connection with the natural world."*
Technical issues	Malfunctions, software glitches, lags, freezing, not responding	*"Despite the technology advancement, devices usually malfunction or do not respond to orders."* *"Often a system glitch may happen at any time."* *"Robots are just programmed devices with many malfunctions and technological problems."*
Communication	Difficulties in communicating well, Difficulties in interaction and engagement, Difficulties in understanding special requests	*"There will be many communication problems......robots cannot interact and engage like humans......they cannot understand special orders."* *"Dealing with them will be according to systematic steps or specific processes; otherwise, they will not understand."*
Unemployment	Loss of jobs, minimizing the number of employees, robotization	*"Many jobs will disappear due to robotization, especially jobs that do not require direct interaction with guests."* *"The number of employees will decrease......the role of employees will be to supervise and solve problems."*
Security	Hackers, data security risks	*"Some people might try to hack them and then steal the data."* *"It could be a security risk."* *"Devices that can move and have cameras and are led through electronic commands that may represent a danger."*

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[5] Author's elaboration

As illustrated in Table 6, there are two categories of rights that robots should have at work, summarized according to the workers' answers to the question, "What types of occupational rights will service robots should have?". The first category is the occupational rights that robots should have at work. It has several themes, such as maintenance, loading not more than capacity, charging stations, the right to have a uniform, the right to have daily cleaning, the right to have a union, and the right to have necessary updates. The second category, the moral rights that robots should have, includes themes such as robot abuse, not hitting or kicking, not being destroyed, and not being misused (see Table 6).

Table 6: Robot rights[6]

Category	Themes	Quotes
Occupational rights	Maintenance, loading not more than capacity, charging stations, right to have a uniform, right to have daily cleaning, right to have a union, right to have necessary updates	*"Well, robots should be considered an asset. They should be maintained periodically and not overloaded with more than their capacity. Charging stations should be located in different places in the hotel."* *"They should be provided with the necessary updates whenever possible.......they should have a special uniform......they should be cleaned on a daily basis."* *"With the increasing role of robots at work, we can find a union to organize their affairs."*
Moral rights	Robot abuse, not hitting or kicking, not being misused, not being destroyed	*"Humans should deal with robots ethically......robots should not be used for anything outside the jobs designed for them."* *"Robots should be maintained and not destroyed.......they should not be hit or kicked if they do not respond."*

The following findings were obtained according to the thematic analysis of the employees' answers to the question, "How could co-working with robots affect employees' well-being?". The results revealed that 60% of the respondents believe that robots will have positive impacts on employees' well-being, while 40% of the respondents believe that robots will have both positive and negative impacts on the well-being of employees. The positive impacts mentioned by the participants are: robots will perform routine tasks, allowing employees to perform meaningful tasks. Robots also taking over dangerous tasks or undesirable working shifts will positively affect employees' moods and health. In addition, human cooperation with artificial intelligence will increase employees' mental abilities and improve the work environment. The negative impacts include that, although robots reduce workload, they will limit social interaction between colleagues and control many jobs (see Table 7).

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[6] Author's elaboration

Table 7: The possible impacts of robot introduction on employees' well-being[7]

Evaluation	Themes	Quotes
Positive	When robots perform routine tasks, workers perform meaningful tasks. Robots taking over dangerous jobs reflects positively on employees' health. Robots taking over undesirable working shifts positively affect the employees' health and mood. Human intelligence cooperation with AI could improve employees' mental health. Enjoyable working environment.	*"I think that robots will have positive effects on staff and will help in serving many guests, especially during peak periods, so this could reduce work stress." "Robots can do dangerous tasks such as cutting meat, dealing with ovens, or cleaning building fronts. This will reduce work injuries and employees' health problems......also, if robots take over the night shifts, which many workers do not desire, this will positively affect job satisfaction." "Working with robots will improve the work environment ......they will increase the fun......dealing with smart devices such as robots will teach me many things."*
Both positive and negative impacts are identified	Reducing workload and job stress. Learning new skills. Enhancing working condition. Reducing social interaction. Losing a lot of jobs and minimizing the number of employees.	*"I believe that robots will positively affect employees' well-being by reducing work stress and improving working conditions but working with robots will decrease social communication between employees." "I cannot spend most of my time without talking to colleagues......it will be bad psychologically." "On the one hand, robots have positive effects, such as learning new technological skills and assisting in many tasks, but on the other hand, they may control many jobs."*

Discussion and conclusions

This study presented several qualitative results regarding the employees' perspective towards working with service robots. The results showed that employees tend to have a positive attitude towards service robots because they are fun and interesting, and robots are an example of development and innovation. These findings are not in the same line with Lu et al. (2020) and Vatan & Dogan (2021), which found negative attitudes by workers toward robots. The employees pointed out many advantages and disadvantages of robots' introduction in hotels. On the one hand, the most important advantages are that robots will improve the hotel's reputation, enhance the quality of service, accurately define roles, and improve the work environment, in addition to freeing up employees from a lot of tasks so they can devote more time to communicating with guests. These results agreed with Ivanov & Webster (2019) and Berezina et al. (2019) as they confirmed the ability of robots to operate continuously around the clock, their capacity to complete jobs accurately and on schedule, their ease of performing many tasks simultaneously, and their ability to provide services with predictable quality. In addition, robots are immune to fatigue and complaint, never go on strike, and never get sick. On the other hand, regarding the disadvantages of service robots, the results revealed that robots do not have real emotions and will control many jobs, causing unemployment. This finding is consistent with Li et al. (2019), who claimed that workers might feel threatened by

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[7] Author's elaboration

robots and express concern about their future employment. Similarly, many studies predicted that 400–800 million jobs would be automated by 2030 (Bowen & Morosan, 2018). The results indicated that the robots would have communication and interaction problems along with technical problems. These aspects depend on the level of progress and modern applications in the robotics industry. The results demonstrated that robot rights are addressed in maintenance, charging stations, and updating, as well as moral rights such as not misusing them and not being hit or kicked when they do not respond. The results showed that cooperation with service robots positively impacts employees' well-being. As robots reduce work stress, workers will be allowed to perform meaningful tasks, and robots will perform hazardous duties, which will positively affect employees' health. This result agrees with Smids et al. (2020), who claimed that doing meaningful work increases job satisfaction and worker well-being. The study showed that robots would limit the interaction between colleagues and thus may negatively affect the well-being of workers.

This study enriches the literature on service robots in hotels by providing results regarding the perceptions of Russian employees. The employees expressed that introducing robots in hotels will have many advantages, such as working extended periods, improving the hotel image, reducing workload, and achieving customer satisfaction. In addition, working with robots will positively affect employees' health and safety and enhance their mental abilities. On the other hand, the workers indicated that robots would dominate many jobs and reduce social interaction between colleagues.

This study suggests some recommendations for hoteliers and decision-makers to effectively introduce robots into hotels. Since service robots offer significant advantages for hotels and personnel, such as improving the hotel's image, enhancing the work environment, increasing service quality, and assisting workers in performing many tasks, the management should support the adoption of integrating robots into the hotel operation. Hotel management should provide the necessary training to enhance workers' skills and create new positions to decrease the unemployment caused by robots. Robotics manufacturing companies should put more effort into security-related concerns like hacking or cybercrime. Modern technology and robotics should be included in the new curriculum at all levels of education in order for individuals to be ready to deal with current challenges in the workplace. The hotel management should establish awareness instructions placed throughout the hotel on how to deal with robots and respect their moral rights. Robotics manufacturing companies should include social programs in robot software in order to mitigate the severity of social isolation caused by working with robots.

This research has certain limitations that may serve as a basis for future studies. First, this study relied on data collected from only 20 hotel employees, and future research should use a larger sample size in order to generalize the findings. Second, this study was conducted in a specific geographical

area of one country. Thus, it will be significant for future studies to include data from different countries with a variety of social and economic conditions. Third, this study conducted interviews as a method of obtaining field data. Future studies should use other methodologies, such as observation of actual interactions between employees and robots, to evaluate employees' natural behavior during their daily working activities. Finally, this study was conducted with hotel staff. Future studies should include other tourism establishments such as restaurants, museums, hostels, airports, and tour operators to examine employees' attitudes towards working with robots and how it affects their well-being.

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ОТНОШЕНИЕ СОТРУДНИКОВ ОТЕЛЯ К СОВМЕСТНОЙ РАБОТЕ ЧЕЛОВЕКА И РОБОТА НА ОСНОВЕ КОНЦЕПЦИИ INDUSTRY 5.0: КАЧЕСТВЕННЫЙ ПОДХОД

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Аннотация. Стремительное развитие информационных технологий и искусственного интеллекта привело к быстрым изменениям в бизнесе. Этот прогресс привел к вспышке промышленных революций, включая пятую промышленную революцию или индустрию 5.0. Важнейшей миссией Индустрии 5.0 является сотрудничество человека и робота для максимального использования преимуществ обоих. Во многих исследованиях оценивалась роль роботов в гостиничном бизнесе и их эффективность в достижении удовлетворенности клиентов и повышении качества обслуживания. Однако эмпирические исследования, касающиеся человеческих ресурсов, ограничены. Таким образом, целью данного исследования является изучение представлений сотрудников отелей о совместной работе с роботами и влияния внедрения роботов на благополучие сотрудников. Исследование основано на полу-структурированных интервью с работниками высококлассных отелей в Екатеринбурге, Россия. Результаты показали, что сотрудники, как правило, положительно относятся к сервисным роботам. Кроме того, сотрудники были осведомлены о преимуществах и недостатках сервисных роботов и аспектах, которые могут повлиять на их благополучие в результате работы с роботами. Исследование предлагает практические последствия для управления гостиницами и дальнейших исследований для ученых.

Ключевые слова: индустрия 5.0; совместная работа сотрудников и роботов; гостиничный бизнес; сервисные роботы; благополучие сотрудников.

JEL коды: M12; I31; O33.

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