Student Perceptions of Unemployment Due to Smart Technology in the Hospitality

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Abstract. This study looks into how students perceive the impact of intelligent technology on the job market, particularly in the hospitality sector. The study looks at how robots affect the workforce and investigates what elements affect students' perceptions and what that means for making strategic decisions. A quantitative research methodology is used to construct and empirically test a conceptual model. The research sample comprises Jakartans from Generation Z, who are between the ages of 14 and 28 and have prior awareness of robotic technology used in the hotel sector. Then, statistics are used to examine the survey data and determine the validity, reliability, and discriminant validity. The findings are consistent with the idea that employees' opinions of robot technology have a beneficial impact on robot-induced unemployment. However, while the perceived usefulness of robots has a favorable impact, the perceived ease of use of robots does not significantly contribute to unemployment. The study also shows that perceptions of students do not significantly influence impressions of employees, simplicity of use, and usefulness. These results aid in understanding how innovative technology affects the workforce and offer guidance for decisions in the hospitality sector.

1 Introduction

Artificial intelligence (AI) technology and robotics have recently become an increasing trend [1]. Many companies are adopting this technology to automate their processes [2]. AI-based solutions are considered intelligent enough to completely replace human activity while increasing transaction speed and accuracy [3].

Companies must overcome several obstacles to implement AI in business activities [4] successfully. With the latest technological advances in AI and robotics, more and more robots are found in the tourism and hospitality industry to assist in daily operations, including serving consumers [4]. There are some benefits of smart technology in tourism like increased efficiency and productivity [5]. Besides in addition, there are several negative factors of artificial intelligence (AI) technology, such as loss of human contact [6].

In 2019, Alibaba Group launched China's AI-equipped 'Fly Zoo' hotel and robots. This efficient technology can replace human effort and perform tasks individuals perform more effectively and accurately [7]. Implementation Hotel robotics is often integrated with other supporting technologies like using a butler robot to deliver food and drinks to guests' hotel, a robot bartender that mixes two drinks per minute from a register, endless combinations of cocktails, and driverless cars [8].

Due to the large number of companies using AI robotics, many companies are focused and willing to invest in this AI robot because it has many benefits for the company [9].

2 Literature review

2.1 Hypothesis development

Employee perception Research shows that service robots make hotel personnel uneasy [10]. That causes exhaustion and a sense of unease [11]. Employee Skills Service robots can lower workforce participation from employees and increase a person's fear of losing their job [12]. The SARF has acknowledged that an individual's talents might influence risk perception [13]. According to existing research, the hospitality and tourism sectors value trained and skilled workers more than service robots [14]. Robots are more likely to replace skilled workers. As workers highly skilled workers do not fear being replaced [15].

A person's willingness to experiment with new technologies is known as tech-savviness [16]. People that comprehend technology are familiar with it and are interested in learning more about it. In the workplace, they are far more knowledgeable about cutting-edge technologies, such as robotics and AI, than people who don't comprehend technology [17]. Their capacity to adapt to cutting-edge technology increases their openness to embracing new ones [18]. As a result, employees who are computer savvy exhibit higher levels of engagement in environments that employ service robots [19].

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Additionally, technologically savvy people are more likely to be more productive when working with cutting-edge technologies [20]. As a result, the hotel provides more opportunities for employees with technical knowledge to operate and maintain service robots [15].

2.2 Student perception

Chen and Hu describe robots as "intelligent physical devices" capable of performing desired tasks using Hu's autonomy, mobility, and sensory capacities [21]. The Robot Institute of America, a trade organization for robot producers and users, describes a robot as a "reprogrammable multifunctional manipulator designed to move materials, parts, tools, or specialized devices, via variable programmable motion for the performance of various tasks." The use of service robots to deliver great service has gained more attention in T&H firms in recent years [22].

Ivanov and Webster looked into the suitability and perceived intention to utilize robots in a T&H firm from a sample of more than 1000 clients spanning more than 87 countries and regions [23]. Findings show that areas for robotic services include information delivery, housekeeping, order- and payment processing, and documentation. Interestingly, this study determined that using robots in tasks requiring human-robot interaction, intimate touch from staff members, and requiring clients to temporarily submit their bodies to the Robot (such as massage or haircut) was undesirable. Robots' human-like and cognitive characteristics have a favourable impact on the hospitality experiences of customers. They also assert that it is challenging to fully replace workers with service robots due to client demand for warm, personalized care [24]. Robots perform better than humans when performing routine tasks because of their mechanical and analytical attributes, claim Reis et al. They also show that while some robots still lack the technological advancements needed to replace people fully, robots with AI capabilities can take the position of employee intellect [25].

Employers and students will become more afraid of robots, which could increase dropout rates. Vatan and Dogan discovered that robot-guest interactions could result in issues with robots, in addition to delivering several benefits and drawbacks [26]. Ivanov et al. examined hotel managers' perceptions of service robots in Bulgaria. They discovered managers hesitated to employ robots out of concern that it would lower service quality. However, hotel management concurs that robots will be suitable for completing boring, risky, dirty, repetitive hotel activities. At the same time, employees must carry out tasks that call for social and emotional intelligence. That implies that staff members will focus on developing visitor relationships by offering personalized service and genuine interactions [15].

2.3 Effect of student perception and PEOU on robot induce unemployment

The degree to which a person believes that adopting technology will reduce excessive effort is known as "perceived ease of use" [27]. According to research, the human-like and cognitive characteristics of robots benefit the customer's hospitality experience. Therefore many companies are integrating themselves into robots, such as a certain level of autonomy, mobility, and sensory abilities that allow robots to complete jobs faster and more accurately [2].

With the convenience provided by robots and many companies that want to use them, this can cause employees to lose their jobs; however, According to research, the hospitality and tourism sector places a higher value on trained and skilled workers than on service robots Robots are more likely to replace skilled workers [15].

2.4 Effect of student perception and PU on robot induced unemployment

Perceived Usefulness is the belief that technology will improve user performance [28]. In other words, perceived Usefulness can be explained as a user's subjective perception or evaluation of the abilities received by the technology. With the rapid development of robotic devices, research on service robots is gaining strong momentum [29]. Many technology products are designed to appear human-like or/and can simulate human emotions and behaviour. This human-like product feature refers to anthropomorphism [30]. Moreover, most research in this area is conducted from a service provider perspective, mainly focusing on mechanical design issues, such as robot display, mapping, and image recognition, and some researchers have also investigated the impact of robots on enterprise operations and management, such as reduced costs and employment [31].

Although a few studies have initially explored customer attitudes and behaviour toward using AI technologies in service contexts, most are based on traditional technology acceptance theories. Because AI tools have unique characteristics that are very different from traditional technology products, such as human mindsets, traditional technology acceptance theories and frameworks may not be sufficient to study customer attitudes and behaviour towards AI tools [32].

2.5 Effect of student perception and employed perception on robot-inducted unemployment

Chen and Hu describe robots as "intelligent physical devices" capable of performing desired tasks using Hu's autonomy, mobility, and sensory capacities [21]. The Robot Institute of America, a trade organization for robot manufacturers and users, describes a robot as a "reprogrammable multifunction manipulator designed to move materials, parts, tools, or specialized devices, through programmable variable motions to perform a variety of tasks." " The use of service robots to provide

good service has been gaining more and more attention in T&H companies in recent years [22].

The human-like and cognitive characteristics of robots have a beneficial impact on the customer's hospitality experience. With these robots, students will become more fearful of robots, which could increase dropout rates. Vatan and Dogan found that robot-guest interactions can lead to problems with robots, providing several advantages and disadvantages [26].

Ivanov et al. looked at hotel managers' perception of service robots in Bulgaria. They found that managers hesitated to use robots for fear of lowering service quality. Still, hotel management agreed that robots would be suitable for completing tedious, risky, dirty, repetitive activities in hotels, while employees have to perform tasks that require social and emotional intelligence [15]. With this in mind, it is difficult to replace workers with service robots completely due to the client's demand for warm and personalized care [24].

That is, if customers have higher positive emotions towards AI devices, they are more likely to accept the use of these robots, and robot-induced unemployment is possible. Still, if it is the other way around, robots are not a threat to employees, and students need not be.

2.6 Hypotesis

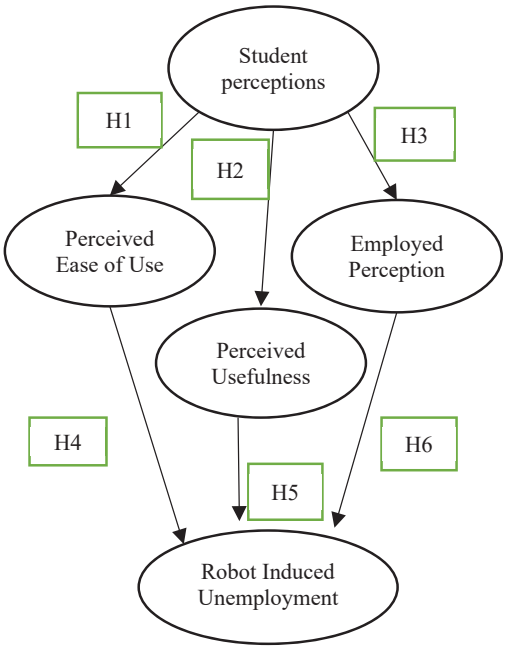

Fig. 1. Hypothesis framework.

H1 : Student perception has a positive effect on perceived ease of use of the robot.
H2 : Student perception has a positive effect on perceived usefulness of the robot.
H3 : Student perception has a positive effect on employee perception.
H4 : Perceived Ease of Use has a positive effect on robot induced unemployment.
H5 : Perceived usefulness has a negative effect on robot induced unemployment.
H6 : Employee perception has a negative effect on robot induced unemployment.

This framework in Figure 1 shows that the Student perception has a positive effect on perceived ease of use of the robot, Student perception has a positive effect on perceived usefulness of the robot., Student perception has a positive effect on employee perception, Perceived Ease of Use has a positive effect on robot induced unemployment., Perceived usefulness has a negative effect on robot induced unemployment, and Employee perception has a negative effect on robot induced unemployment.

3 Methodology

We used a quantitative research methodology to perform the research for this study. This study was done to examine the impact of robots that have the potential to replace people in the workforce. We chose students and workers for this study who are thinking about working in hotels in the future. All of the Generation Z residents of Jakarta who responded to the research questionnaire, ranging in age from 14 to 28, had prior knowledge of the advancement of robotic technology in the hotel industry. Hair states that ten times as many samples are required as variables [33].

Quantitative research frequently calls for systematic and empirical analysis of phenomena through statistics and mathematics, in addition to looking at numerical data. Creating numerical estimates is a fundamental linking mechanism in quantitative research, as a crucial link between empirical knowledge and the numerical representation of correlational analysis. Data are frequently randomly chosen, gathered, and then submitted to numerical analysis while doing quantitative research [34]. The distribution of questionnaires will serve as the primary tool for collecting data for this project.

Hair asserts that 10 times as many samples as required by the required number of variables must be used [35].

4 Results and discussion

4.1 Demographic

Table 1. Demographic.

Characteristic	Frequency	Percentage
Age		
16-22 years old	48	44.9%
23-28 years old	45	42.1%
29-34 years old	10	9.3%
35-40 years old	2	1.9%
>40 years old	2	1.9%
Gender		
Male	63	68.9%
Female	44	41.1%
Job		
Student	54	50.5%
Hotel Employee	38	35.5%
government employees	3	2.8%
businessman	9	8.4%

Doesn't work	3	2.8%
domicile		
Central Jakarta	11	10.3%
West Jakarta	31	29%
East Jakarta	17	15.9%
North Jakarta	19	17.8%
South Jakarta	29	27.1%
Know Robot Industries		
Know	92	86%
Don't Know	15	14%

(Source : primary data)

According to the data presented in Table 1, we received 63 responses from men, representing 68.9% of the total, and 44 responses from women, representing 41.1% of the total. The most prominent age among our respondents was 16-22 years, which received 48 responses (44.9%). the majority of respondents' jobs were students with 54 responses (50.5%). With 107 responses 92 people know about industrial robots with a percentage of 86% and 15 people who or 14% of the total, most of our respondents have incomes between. Most of the respondents that we examined were mostly from West Jakarta, with 31 of them with a percentage of 29%.

4.2 Validity convergent and reliability test

The followings are the results of convergent validity tests consisting of loading factor and AVE values of each research variable. The 19 indicators in this study. 10 times 10 is 100 respondents, which is the required amount of respondents.

Table 2. Validity convergent.

Variable	Code	Loading factor	AVE	CA	CR
Student perceptions	Sp1	0.939	0.732	0.662	0.844
	Sp2	0.764			
Perceived Ease of Use	PEO U1	0.868	0.682	0.538	0.811
	PEO U2	0.782			
Perceived Usefulness	PU1	0.972	0.607	0.466	0.738
	Pu2	0.517			
Employed Perception	Ep1	0.730	0.646	0.462	0.783
	Ep2	0.871			
Robot Induced Unemployment	RIU1	0.859	0.497	-0.013	0.650
	RIU2	0.506			

(Source : primary data)

The data processing results in the table show that the factor loading is more significant than 0.5 [36]. And the AVE value is more significant than 0.5 [37]. The inference can be made that all of the indicators for each variable in the above table are reliable.

The results in the table allow for the drawing of this conclusion. With a value more excellent than the required, the Composite Reliability and Cronbach's Alpha results are demonstrated to have strong outcomes, which is 0.5 [38], according to Table 2. This shows that the indicators included in the questionnaire have a high degree of consistency. It may be inferred from the table above that all indications are trustworthy.

4.3 Discriminant validity

The discriminant's legitimacy may be considered high if the construct's AVE root is higher than the relationship between the construct and any other inactive components [39].

Table 3. Discriminant validity.

	Employed Perception	Perceived Ease of Use	Perceived Usefulness	Robot Induced Unemployment	Student Perception
EP1	**0.730**	0.502	0.261	0.418	-0.054
EP2	**0.871**	0.392	0.477	0.584	0.058
PEOU1	0.447	**0.868**	0.344	0.475	-0.237
PEOU2	0.447	**0.782**	0.365	0.435	0.025
PU1	0.455	0.350	**0.972**	0.623	-0.249
PU2	0.275	0.456	**0.517**	0.228	0.116
RIU1	0.467	0.568	0.547	**0.859**	-0.395
RIU2	0.452	0.119	0.280	**0.506**	0.167
SP1	-0.097	-0.141	-0.204	-0.269	**0.939**
SP2	0.008	-0.102	-0.110	-0.141	**0.764**

(Source: primary data)

Table 3 shows that each marker of the analyzed variable has the maximum cross-loading value when compared to the cross-loading values of other markers. The table refers to this as having the "most elevated cross-loading esteem." Considering these results, it can be said that the used indicators exhibited a high degree of discriminant validity.

4.4 Hypotheses test

This theoretical test aims to establish whether or not the autonomous variable and the subordinate variable have a substantial impact on the system as a whole. based on Hair's discoveries [40]. A conclusion on this hypothesis test has been obtained, which states that p-values of less than 0.05 imply that the independent factors significantly impact the dependent variable.

Figure 2 show that Employed Perception -> Robot Induced Unemployment positively and significantly, Perceived Ease of Use -> Robot Induced Unemployment, Perceived Usefulness -> Robot Induced Unemployment, Student Perception -> Employed Perception, is rejected, Student Perception -> Perceived Ease of Use, is rejected, Student Perception -> Perceived Usefulness, is rejected

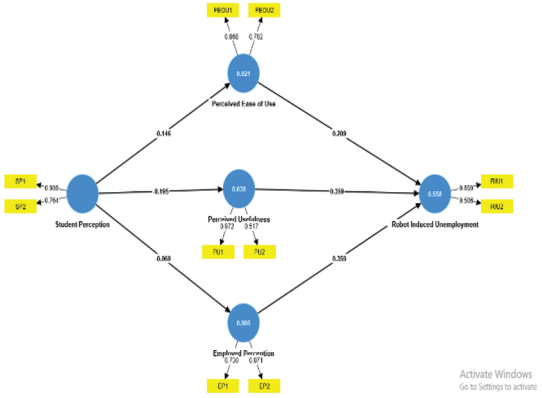

Fig. 2. Path model analysis.

Table 4. Hypothesis test.

hyphothesis	T-Statistic	P-Value	Result
H1: Employed Perception -> Robot Induced Unemployment	2.470	0.014	Accepted
H2: Perceived Ease of Use -> Robot Induced Unemployment	1.724	0.085	Rejected
H3: Perceived Usefulness -> Robot Induced Unemployment	4.245	0.000	Accepted
H4: Student Perception -> Employed Perception	0.431	0.667	Rejected
Student Perception -> Perceived Ease of Use	0.889	0.374	Rejected
Student Perception -> Perceived Usefulness	0.990	0.322	Rejected

Based on Table 4, this study revealed that Hypothesis 1, Employed Perception -> Robot Induced Unemployment positively and significantly. It can be concluded that H1 is accepted (β = 0.350 t = 2.470 p < 0.05). The result of Hypothesis 2, which is Perceived Ease of Use -> Robot Induced Unemployment, is rejected (β = 0.209 t = 1.724 p < 0.05). Hypothesis 3, Perceived Usefulness -> Robot Induced Unemployment, positively and significantly (β = 0.359 t = 4.245 p > 0.05). Hypothesis 4, Student Perception -> Employed Perception, is rejected (β = -0.069 t = 0.431p < 0.05). Hypothesis 5 which is Student Perception -> Perceived Ease of Use, is rejected (β = -0.146 t = 0.889 p < 0.05). Hypothesis 6, Student Perception -> Perceived Usefulness, is rejected (β = -0.195 t = 0.990 p < 0.05).

4.5 Discussion

The study's findings shed more light on the connection between workers' opinions on robotic technology and unemployment brought on by robots. The first hypothesis, "Perception of Employment -> Robot-Induced Unemployment," was significantly supported by the analysis (β = 0.350, t = 2.470, p 0.05).

Demonstrates that the likelihood of robot-induced unemployment is higher the more favorable an employee's impression of the use of robots at work is. The data, however, disproved the second hypothesis, which read "Perceived Ease of Use -> Robot-Induced Unemployment" (β = 0.209, t = 1.724, p 0.05). That shows that the perceived usability of robotic technology does not significantly contribute to unemployment brought on by robots. This shows that other factors may significantly impact the unemployment rates brought on by robots.

The third hypothesis, "Perceived Usefulness -> Robot-Induced Unemployment," was also significantly and favorably supported (β = 0.359, t = 4.245, p > 0.05). These findings suggest that the likelihood of robot-induced unemployment increases with workers' perceptions of the advantages of adopting robotic technology at work.

However, the results of the study rejected the fourth, fifth, and sixth hypotheses, namely "Student Perception -> Job Perception," "Student Perception -> Ease of Use Perception," and "Student Perception -> Usefulness Perception," with each (β = - 0.069, t = 0.431, p < 0.05), (β = -0.146, t = 0.889, p < 0.05), and (β = -0.195, t = 0.990, p < 0.05). This demonstrates that worker impressions of the utilization, benefits, and convenience of the use of robots at work are not significantly influenced by student perceptions.

The findings of this study suggest that worker views of robot use at work may affect rates of unemployment brought on by robots in this environment. The likelihood of robot-induced unemployment can be influenced by how employees view the advantages of adopting robotic technology. However, students' impressions and the perceived use of robot technology are not particularly important.

5 Conclusion

A study on students' opinions of job loss brought on by robots in the hospitality sector is presented in the accompanying text. The study attempts to address a gap in the literature, analyze how robots affect the workforce, and offer information for making strategic decisions.

Several hypotheses on employee and student perspectives are included in the section on hypothesis development, along with those regarding the impacts of perceived Usefulness (PU), perceived ease of use (PEOU), and employee perception of robot-induced unemployment. The hypotheses propose beneficial associations between variables, including employee perception and robot-induced unemployment, employee perception and PEOU, and student perception and PU.

The methodology section describes the research strategy as quantitative and aims to investigate how robots affect the workforce. Students and workers interested in the hospitality sector are the intended participants. Using the distribution of questionnaires as the data collecting method, 100 respondents are considered a suitable sample size.

Convergent validity tests, which look at the values of each study variable's loading factor and average variance extracted (AVE), are used to evaluate the validity and dependability of the data. The findings show that every signal is trustworthy and consistent. Also assessed is discriminant validity, and the indications show solid discriminant validity.

A route model analysis and hypothesis testing are used to show the study of the research data. The hypothesis testing looks at the importance of these associations after the route model analysis has shown the relationships between the variables. The findings are consistent with the idea that employee perception has a favorable impact on robot-induced unemployment. However, the PEOU, PU, and student perception hypotheses are disproven.

A more thorough examination of the research findings is provided in the discussion section. It draws attention to the critical role that employee perception plays in robot-induced unemployment and contends that an optimistic view of robot usage raises the likelihood of unemployment. The study also underlines that perceived Usefulness influences the risk of robot-induced unemployment. It concludes that other factors may significantly impact the unemployment rates brought on by robots.

Overall, this research study helps us understand how people think about robots and their possible effects on unemployment in the hospitality sector. It offers a basis for more research and delivers insightful information for decision-makers.

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