The Cultural Receptivity of Cambodians to Humanoid Robots in the Workplace and at Home: An Empirical Examination

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ABSTRACT

This study is a pioneering effort that attempted to assess the cultural receptivity of Cambodians to humanoid robots (i.e., potential acceptance in the workplace and in the home). It also attempted to assess the degree of fear of job displacement due to the future introduction of humanoid robots in the workplace. **Design/Methodology:** The undergraduate population of an institution of higher education in Phnom Penh was examined utilizing an anonymous, self-administered questionnaire (Likert scale questions) that tested four demographic, independent variables (gender, year of study, where the respondent grew up - Phnom Penh v. the provinces, and work experience. The questionnaire also contained twenty-eight attitudinal questions and allowed respondents to rate specific occupations as to their potential for job displacement by humanoid robots. The data obtained was subjected to statistical analysis. **Findings:** The study found significant differences for all the hypotheses, with the variable of gender demonstrating the greatest differential. Statistically significant differences were found, to lesser degrees, regarding the independent variables of year of study, location where the respondent grew up, and work experience. Finally, there were statistically significant differences in the ratings of how well humanoid robots would perform and replace humans in various occupations. **Originality/Value:** This is the first empirical study conducted in Cambodia regarding the receptivity of humanoid robots. Assessing the cultural receptivity of the emerging technology of humanoid robots, with all the preferences, attitudes, and expectations involved, is crucial in aiding Cambodia and other nations toward effectively integrating humanoid robots into their societies.

JEL Classifications: O31, O33, Z1

I. INTRODUCTION

The humanoid robot (HR) industry is rapidly evolving, with significant technological and market potential developments. HRs, with programmed foundational knowledge and machine-learning capabilities, are designed to mimic human form and behavior by utilizing hand-like arms, legs, and a head. These anthropomorphized creations then become capable of performing tasks that typically require human intelligence and dexterity.

The HR industry spans various applications in the fields of manufacturing, warehousing, logistics, healthcare, retail, service/hospitality, education, research, and other areas (Shumei, 2024). As per the International Federation of Robotics, the worldwide demand for robotics has generated a population of approximately 3.9 million industrial robots (International Federation of Robotics, 2024). However, only a fraction

of these currently consist of HRs. The global HR market is projected to reach $38 billion by 2035, driven by increasing automation, an aging population, labor shortages, and the need for more efficient and scalable service solutions (Goldman Sachs, 2024). The use of robots, in general, has especially undergone a rapid increase in manufacturing, retail, and warehousing. As an example, Amazon utilizes approximately 700,000 robots per day (industrial and HRs) to ship about 400 million products around the world (DNB Asset Management, 2024; Evans, 2024). In addition to the business environment, HRs are expected to be sold for domestic use where as many as 225 million household HRs could be in an estimated 15% of global households by 2035 (Caspi, 2024).

Many Asian countries are actively promoting robotics in both the private and public sectors. The Japanese government has outlined a comprehensive strategy to integrate robots into various sectors, including agriculture, healthcare, retail, and logistical infrastructure. The South Korean government has pushed for smart factories and automation in small and medium-sized enterprises to maintain competitiveness. Both of these nations have been receptive to HRs. In Japan, robots are often viewed positively, reflecting a cultural tendency to anthropomorphize non—human entities (e.g., animism in Shintoism) (Baffelli, 2021). HRs are perceived as helpful and friendly (e.g., *Astro Boy* and Doraemon), and Japanese culture emphasizes integration into society (Baffelli, 2021; Jensen & Blok, 2013). In China, the HR market is expected to reach about $300 million in 2024, to increase to an estimated $5.4 billion by 2030 (Global Times, 2024).

In Southeast Asia, Singapore is the leader in robotics and its population is receptive to robots in public areas. However, Cambodia, like most of the other Southeast Asian nations, has had limited exposure to robotics in general and humanoid robots in particular (Bui, 2020). Since it is in its early development, country's current socio-technical AI ecosystem has been assessed to require substantial coordination with the industrial, academic and governmental components of the nation to better adopt and utilize technological benefits from AI and robots (Heng et al., 2022; Ministry of Industry, Science, Technology & Innovation, 2023; Phyrom, 2022). A few robotics companies exist with the Cambodia's AZ Group partnering with Thailand-based TKK Corporation and another Cambodia firm, AI Farm Robotics, partnering with STS Robotech from South Korea (B2B Cambodia, 2022; Malai, 2024). In 2024, Cambodia's Ministry of Industry, Science, Technology & Innovation signed a memorandum of understanding to work with the Korean Institute for Robot Industry Advancement (South Korea) to advance the robotics industry and promote technological transfer and research (Sokhean, 2024). To date, most of the research about robotics in Cambodia has been generated by the government, with very limited contributions from the private sector. In addition, there is virtually no academic literature regarding robotics and specifically HRs in Cambodia. Therefore, this study is a pioneering effort that sought to achieve the following research objectives:

1. To determine the degree of cultural receptivity to HRs by Cambodians by examining the demographic variables of gender, respondent's year of university study, location where the respondent grew up, and work experience.
2. To determine any differentials in the perception of job displacement by specific occupations of HRs.

3. To assess the degree of possible friendship and intimacy with HRs with the anticipation that the introduction of HRs into society will impact interactions not only in the workplace and but also in households.

II. LITERATURE REVIEW

To assess cultural receptivity to HRs, this study examined four demographic variables: gender, year of study (freshman, sophomore, junior, senior), location where the respondent grew up (specifically, Phnom Penh v. the provinces), and work experience (no experience v. at least one year of work). Ethnicity and religion differentials were not examined because of the overwhelming homogeneity of the undergraduate student population that was studied. The age range of, primarily, 18 to 22 years old was too narrow for statistical analysis. (See the Research Design and Methodology section of this paper for a discussion of the demographic profile of the sample population.)

The body of literature on cultural receptivity to HRs is relatively small. Regarding gender, some studies found that female respondents communicated less fear and anxiety regarding potential human-robot interactions (Bartneck et al., 2006; Mavridis et al., 2012). However, other studies found that males responded more positively toward potential human-robot interactions (Andtfolk et al., 2012, Brandon, et al., 2021; Nordmo et al., 2020; Scheutz & Arnold, 2018). Given the preponderance of the studies' results, the following hypothesis was tested:

H1: *There will be a statistically significant difference in ratings of the receptivity statements by gender.*

No studies measuring the degree of receptivity of HRs have examined the level of education as a demographic variable. Unlike a respondent's age, the exposure of knowledge to humanoid robots over a four-year undergraduate education helps to determine if incremental academic knowledge and increasing exposure to media coverage of HRs affects receptivity.

H2: *There will be a statistically significant difference in ratings of the receptivity statements by educational attainment, specifically year in college (Freshman, Sophomore, Junior, and Senior).*

This study also attempted to gauge if a respondent's upbringing in a central city (in this case, Phnom Penh – with greater exposure to Western culture) versus a more rural setting (in this case, the provinces outside of Phnom Penh) would affect the degree of potential receptivity to HRs. No current literature exists that addresses this variable.

H3: *There will be a statistically significant difference in ratings of the receptivity statements by location where the respondent grew up.*

Several studies have analyzed the potential impact of HRs in the workplace, including the perceived fear of job displacement of humans (Autor & Salomons, 2017;

Dahlins, 2019; Ford, 2015: International Federation of Robots, 2021; Morikawa, 2017; Rodgers & Freeman, 2019). This study sought to assess the potential impact of work experience (at least one year versus less or none) to gauge if actual exposure to the workplace affected receptivity to HRs as co-workers. The study also explored the perceived viability of employment of HRs (triggering potential job displacement of humans) within a tested series of occupations. There is no current literature that specifically addresses these variables.

H4: *There will be a statistically significant difference in ratings of the receptivity statements by work experience (Greater than or equal to one year vs. less than one year).*

H5: *There will be statistically significant differences in the ratings of how well HRs will replace humans in various occupations.*

III. RESEARCH DESIGN AND METHODOLOGY

The undergraduate population of a business-oriented, higher education institution in Phnom Penh, Cambodia was studied based on convenience sampling. The Krejcie and Morgan (1970) table was utilized to create an inferential sample of 327 respondents from a general population of 2,127 students. As per the demographic (independent) variables being examined, the sample reflected the general population percentage breakdown as to gender and year of study: females (226 respondents in total, representing 69% of both the sample and general populations) and males (101 respondents in total, representing 31% of both the sample and general populations). As to study by year, respondents were selected to match the actual percentages of the general population: Year 1 (freshman) consisted of 85 respondents or 26% of the general and sample populations; Year 2 (sophomore) consisted of 78 respondents (24%); Year 3 (junior) consisting of 71 respondents (21%) and; Year 4 (senior) consisting of 93 respondents (29%). The school's administration had no specific data for the demographic variables of where the respondents grew up and any work experience.

The study operationalized receptivity variables (see below) into a set of statements to which respondents were requested to indicate their level of agreement on a forced-choice, four-point Likert scale from "Strongly Disagree" (value of 1) to "Strongly Agree" (value of 4). As a result of pretesting the questionnaire, this scale was designed to deliberately exclude a neutral option (e.g., "Not Sure"), due to the cultural trait of avoiding the assertion of one's opinion or emotional reaction (Holmes et al., 2003; Johnson & Morgan, 2016).

An anonymous, self-administered paper questionnaire, consisting of four demographic variables and twenty-five attitudinal questions, was administered in a classroom setting. Potential respondents were informed that participation was voluntary and that non-participation would not adversely impact the student. The process was anonymous with respondents told not to write their name or student identification number.

The questionnaire was translated into Khmer and translated back by a native speaker of Khmer to assess for any loss in translation (Domyei & Taguchi, 2009). A pretested questionnaire in Khmer was then administered to the sample population which consisted of English as a second language (ESL) students. The twenty-eight attitudinal statements used are listed below in the order in which they were presented in the survey. The reliability analysis for these statements produced a Cronbach's Alpha of .765, exceeding the .70 requirement for internal consistency (Hair et al., 2010).

Receptivity Statements

Dependent Variable	Corresponding Question in the Administered Survey
Intro Good	The introduction of humanoid robots into society will be good for humans.
More Cheaply	Humanoid robots will make businesses more efficient (i.e., cheaper to do).
More Effective	Humanoid robots will make products in a more effective way (i.e., make things better than real humans).
Enter Workforce	I believe that humanoid robots will enter the workforce in: one year (Likert value of 1); five years (value of 2); ten years (value of 3); twenty years (value of 4); more than twenty years (value of 5)
Take my Job	I believe that humanoid robots will take my job in the future.
Better Soldiers	I believe that humanoid robots will be better soldiers than humans.
Lose Control	I believe that human beings may lose control of humanoid robots.
Take over Control	I believe there is a chance that humanoid robots may try to take control over humans.
Harm Economy	I believe that bringing humanoid robots into the workforce will cause a lot of instability and harm the economy (e.g., large unemployment).
Good Friend	I believe that a humanoid robot can be as good a friend as a real human being.
Sex OK	If a humanoid robot is built with sexual abilities, it is ok to have sex with it.
Right from Wrong	I believe humanoid robots can develop a conscience (i.e., know right from wrong) and will act on that conscience.
Mentally Sick	People who have sex with humanoid robots are sick
Fewer Babies	Humanoid robots may cause people to have fewer babies and the population may go down as a result.
Share Emotions	I believe I can share my emotions and feelings with a humanoid robot.
Plan Sex	When I have the opportunity, I plan to have sex with a humanoid robot.
Work with Well	I believe that I can work well with a co-worker who is a humanoid robot.
Cannot Angry	I like the idea that a humanoid robot cannot get angry at me or be abusive.
Accept Politician	I believe it is OK to have a humanoid robot as a politician making rules for us.

General of Army	I believe it is OK to have a humanoid robot as a General leading an army.
Fall in Love	I believe it is possible to fall in love with a humanoid robot and have a relationship like a human.
Control Us	I believe that governments may use humanoid robots to control us or report on us (i.e., social control).
Intent to Buy	When they become available, I would like to buy a humanoid robot to work in my home.
Better Economy	I believe that humanoid robots will result in an improved and better economy similar to what computers have done.
Lower Prices	I would choose to do business with a company that had humanoid robots that interacted with customers if it lowered the prices that the company charged.
Widely Accepted	I believe that humanoid robots will be quickly and widely accepted by the public, in general, around the world.
Replace Humans	I believe it is wrong for a company to replace humans with humanoid robots to lower a company's labor costs.
CEO of Company	I believe it is OK to have a humanoid robot as a Chief Executive Officer of a company.

IV. DATA ANALYSIS AND DISCUSSION

As a part of the survey, participants were requested to respond to four grouping variables including gender, year of study in the university (classification as freshman, sophomore, junior, or senior), whether they had worked for at least a year, and whether they grew up in Phnom Penh or in another province in Cambodia. Totals for each of these variables are presented in Table 1.

Table 1: Grouping Variables

Gender		University Classification (by Year)				Location Where Grew Up		Worked at Least One Year	
Male	Female	Fr.	Soph.	Jr.	Sr.	Phnom Penh	Provinces	Yes	No
101	226	85	78	71	93	189	138	35	292

Table created by the authors.

The first hypothesis proposed that there would be statistically significant differences in the mean ratings of the receptivity statements by the gender of the respondent. To test this hypothesis, a t-test was performed on the data to determine if any statistically significant differences existed in mean receptivity statement ratings between the two groups. Since a Levene test analysis indicated that for some of the statements there was a lack of homogeneity of variance for the two groups, the option for Equal Variances Not Assumed was utilized for these statements in examining the t-test results. The statistically significant outcomes of this hypothesis test are presented in Table 2.

Table 2: T-test Results of Mean Response Ratings for Humanoid Robots by Gender*

Receptivity Statement	Gender						
	Male (101)		Female (226)		Mean		
	M	SD	M	SD	Differ	t	p
Introduction Good	2.93	.542	2.44	.703	.397	5.606	>.001
Create Products Cheaply	3.11	.609	2.91	.613	.209	2.883	.004
More Effective	2.97	.627	2.60	.800	.372	4.574	>.001
Enter Workforce[1]	2.95	.777	2.76	.781	.196	2.118	.035
Take My Job	2.69	.788	2.98	.864	-.292	-2.931	.004
Better Soldiers	3.11	.974	2.50	1.019	.619	5.200	>.001
Harm Economy	3.14	.579	3.40	.649	-.254	-3.554	>.001
Good Friend	2.58	.735	2.22	.848	.253	2.626	.009
Sex OK	2.51	1.074	2.09	.802	.367	3.114	.002
Right From Wrong	2.42	.757	2.20	.891	.221	2.324	.021
Mentally Sick	2.09	.895	2.89	.857	-.678	-6.584	>.001
Plan Sex	2.58	.806	1.34	.586	1.239	14.083	.>.001
Social Control	2.59	1.053	2.20	.891	.392	3.299	.001
Intend to Buy	2.76	.995	2.32	.948	.375	3.282	.001
Better Economy	2.94	.718	2.71	.717	.231	2.719	.007
CEO of Company	1.61	.935	1.37	.593	.240	2.412	.017

Table created by the authors.

* Where 1 = Strongly Disagree and 4 = Strongly Agree

[1] Where 1 = 5 years; 2 = 10 years; 3 = 20 years; and 5 = >20 years

In the first hypothesis, it was proposed that significant differences in mean ratings of the receptivity statements would vary significantly by gender. Table 2 shows that the predicted differences in mean ratings did vary by gender for sixteen of the twenty-eight statements or 57.1% of the total statements. This included Introduction Good (t = 5.606, df = 258.428); Create Products Cheaply (t = 2.883, df = 325); More Effective (t = 4.574, df = 254.570); Enter Workforce (t = 2.118, df = 325); Take My Job (t = -2.931, df = 325); Better Soldiers (t =5.200, df = 325); Harm Economy (t = -3.554, df = 226.722); Good Friend (t = 2.626, df = 325); Sex OK (t = 3.114, df = 160.802); Right From Wrong (t =2.324, df =237.008); Mentally Sick (t =-6.584, df = 325); Plan Sex (t =14.083, df = 157.925); Social Control (t = 3.299, df = 176.706); Intend to Buy (t = 3.282, df = 325); Better Economy (t = 2.719, df = 203.770) and CEO of Company (t = 2.412, df = 144.835).

Of the sixteen receptivity statements only three times did females more strongly agree than did the males: Take my Job, Harm Economy, and Mentally Sick (to have sex with an HR). These were the three of the four statements that could be easily construed to suggest that respondents were not receptive to HRs: Take My Job, Harm the Economy, and sex with HRs is Mentally Sick while they did not rate Social Control (by HRs) higher than did men. Men had higher mean receptivity ratings for such things as viewing HR introduction into society as good. HRs would be more effective and make products more cheaply, they would know right from wrong and act on that knowledge, HR introduction would help the economy, and they intended to buy one when they became available. Men also rated statements aimed at the development of personal relations with HRs more highly

than women, providing higher mean ratings for HRs having the potential to be a good friend, sex was OK with them, and they planned to do so. Since H_1 proposed that there would be statistically significant differences in mean ratings of the receptivity statements by gender, this hypothesis is partially supported.

The next hypothesis, H_2, suggested that there would be statistically significant mean differences in how the HR receptivity statements were rated by the respondents' year of study in the university (freshman, sophomore, junior, and senior). Since there were four groups, a MANOVA was selected as the proper statistical method to examine the groups for statistically significant mean rating differences, minimizing any possible Type-1 error. When the data were examined for homogeneity of variance and group size differences, it was found that the homogeneity assumption was violated though group size differences were acceptable. However, due to the failure to meet the homogeneity assumption, the Welch test (a more robust test for differences) was employed to examine group differences. Table 3 presents the results of this test and shows the receptivity statements where two or more groups out of the four were found to have statistically significant mean rating differences.

Table 3: Statistically Significant Differences in Receptivity Statement Means by University Year of Study

Receptivity Statement	Source	DF	SS	MS	F	Welch's F	p
Mentally Sick	Between	3	111.801	3.934	4.767	5.495	.001
	Within	323	266.529	.825			
	Total	326	278.330				
Share Emotions	Between	3	7.474	2.491	3.165	3.390	.019
	Within	323	254.257	.787			
	Total	326	261.731				
Plan Sex	Between	3	11.612	3.871	5.181	6.351	>.001
	Within	323	241.293	.747			
	Total	326	252.905				
Social Control	Between	3	7.385	2.462	2.702	2.787	.042
	Within	323	294.254	.911			
	Total	326	301.639				

Table created by the authors.

As indicated in Table 3, statistically significant differences were found to exist in mean receptivity ratings for four of the twenty-eight statements. These included Mentally Sick, Share Emotions, Plan Sex, and Social Control. While the MANOVA does indicate statistically significant differences for these statements, it does not indicate in which pairings of groups these differences occur. To determine this, a post hoc test was conducted on these variables using the Games-Howell test which does not assume equality of variances. Table 4 presents the results of this test.

Table 4: Statistically Significant Pairings of Receptivity Statements by University Year of Study*

Receptivity Variables	Classifications	M	SD	p-value
Mentally Sick	Fr. vs. Soph.	2.41 vs. 2.94	.918 vs .769	>.001
Share Emotions	Fr. vs. Soph.	2.30 vs. 2.71	.873 vs .830	.010
Plan Sex	Fr. vs. Soph.	1.95 vs. 1.44	.856 vs. .726	>.001
	Soph. vs. Jr.	1.44 vs. 1.79	.726 vs. .991	.049

Table created by the authors.
* Where 1 = Strongly Disagree and 4 = Strongly Agree

Of the twenty-four paired comparisons for the receptivity statements found to show statistically significant differences by the Welch test, only four pairings were found to be statistically significantly different using the Games-Howell post hoc test. The Freshman group appeared in three of these significant groupings while the Sophomore group appeared in all four statistically significant pairings. Interestingly, even though the MANOVA indicated statistically significant differences in at least one pairing for the receptivity statement Social Control, the Games-Howell did not indicate a significant difference at p = .08 for Freshman vs. Sophomore. Further, even though the Welch test did not indicate significant differences for the receptivity statement General of the Army at p = .063, the Games-Howell post hoc test of this statement indicted significant differences between the Freshman and Senior groupings at p = .037 (*m* = 1.74 vs. 1.39, *sd* = .953 vs. .691).

Due to the narrow range regarding the ages of the respondents, their ratings of the receptivity statements showed few statistically significant differences. However, the differences that were found were between freshmen and sophomores, two groups separated by at most a year or two in experience and education. While not many significant differences in mean receptivity ratings were found to exist between the possible one hundred forty-four group pairings, H_2, suggesting differences would be found across university classes by year of study, was partially supported.

The third hypothesis compared the ratings of the students raised in Phnom Penh to those raised in other provinces, suggesting that there would be differences in their mean ratings of the receptivity statements. To test this hypothesis, a t-test was performed on the rating data to look for statistically significant differences between these two groups. The statistically significant results are shown in Table 5.

Table 5: T-test Results of Mean Response Ratings for Humanoid Robots by Where Respondent Grew Up*

Receptivity Statement	Location						
	Phnom Penh (189)		Provinces (138)		Mean Differ	t	p
	M	SD	M	SD			
Right from Wrong	2.14	.883	2.44	.789	-.291	-3.088	.002
Mentally Sick	2.79	.932	3.13	.699	.272	2.656	.008
Cannot Angry	2.62	.886	2.83	.839	-.208	-2.168	.031

Social Control	2.43	1.010	2.18	.875	.255	2.435	.015
CEO of Company	1.36	.652	1.56	.807	-.206	-2.477	.014

Table created by the authors.
* Where 1 = Strongly Disagree and 4 = Strongly Agree

As indicated in Table 5, those that grew up in Phnom Penh significantly differed from respondents that grew up in other provinces on five of the twenty-eight receptivity statements or 17.9% of the total statements. These differences were found for the statements: Right from Wrong (t = -3.088, df = 325); Mentally Sick (t = 2.656, df = 325); Cannot Angry (t = -2.168, df = 307.691); Social Control (t = 2.435, df = 318.081); and CEO of Company (t = -2.477, df = 261.416).

While too few statements were found to be statistically different between the two groups to identify much of a pattern in responses, persons who grew up in the provinces provided higher mean ratings for the statements Right from Wrong, (an HR) Cannot get Angry and CEO of Company which indicates a more positive view of HRs than those growing up in Phnom Penh, who rated (sex with HRs) is Mentally Sick and (government use of HRs for) Social Control significantly higher. This seemed to indicate those in the group from Phnom Penh viewed HRs more negatively. This may be due to greater mistrust from exposure to foreign media and pop culture that frequently portray robots as a threat to humanity. While few statistically significant differences were found in ratings of receptivity statements, five were found providing partial support for H_3.

The fourth hypothesis compared the mean receptivity ratings for persons who had worked for at least a year to those who have not. To test this hypothesis, once again a t-test was performed. The results are presented in Table 6 for those receptivity statements where significant differences in the mean ratings were found to exist between the two groups.

Table 6: T-test Results of Mean Response Ratings for Humanoid Robots by Worked vs. Have Not Worked for at Least One Year*

Receptivity Statement	Worked						
	At Least a Year (35)		Not Worked (292)		Mean Differ	t	p
	M	SD	M	SD			
Create Products Cheaply	2.71	.458	3.00	.629	-2.89	-2.637	.009
Enter Workforce[1]	3.14	.772	2.78	.778	.362	2.605	.010
Good Friend	2.09	.658	2.37	.834	-.288	-2.366	.022
Share Emotions	2.26	.611	2.54	.921	-.281	-2.409	.019
Cannot Angry	2.43	.850	2.74	.869	-.315	-2.028	.043
Replace Humans	2.49	.612	2.91	.822	-.429	-2.984	.003

Table created by the authors.
* Where 1 = Strongly Disagree and 4 = Strongly Agree
[1] Where 1 = 5 years; 2 = 10 years; 3 = 20 years; and 5 = >20 years

As displayed in Table 6, there are six receptivity statements where the mean ratings for the two groups were significantly statistically different. These included Create Products More Cheaply (t = -2.637, df = 325); Enter Workforce (t = 2.605, df = 325); Good Friend (t = -2.366, df = 48.116); Share Emotions (t = -2.409, df = 54.558); Cannot Angry (t = -2.028, df = 325); and Replace Humans (t = -2.984, df = 325).

Those that had not worked had higher mean ratings for all of the receptivity statements except one: when the groups predicted that HRs would enter the workforce. Overall, those that have not worked seem to have a more positive view of HRs than that of people who have had some work experience. The non-workers feel that HRs can make products more cheaply, can be a friend and "someone" with whom you can share emotions and they will not get angry. The only negative statement to which they expressed higher agreement was that they did not want HRs to replace humans in the workforce. Since the hypothesis suggested that there would be statistically significant difference in mean receptivity ratings for these two groups and six were found, H_4 is partially supported.

The final hypothesis, H_5, moves away from receptivity statements and instead, suggests that mean ratings of how likely it is that HRs will replace humans in varying job types will vary significantly. As a means to test this hypothesis, a variety of jobs were presented to respondents who rated how likely it was that HRs replace humans in each on a scale of 1 to 5, with 1 indicating that there would be "very little chance" of the HR replacing a human in that role and 5 indicating that the respondent felt that there would be a "great chance" of the HR replacing a human. The mean of the ratings for all jobs was calculated and a t-test was then performed to examine whether ratings for the various jobs varied significantly from the grand mean for all jobs. Table 7 provides the occupations examined and the outcome of the t-test. Results are presented in descending mean expectation order.

Table 7: T-test of Differences in Mean Ratings for Expected Job Displacement in Occupations

Occupation	Mean Expectation	SD	t	df	Mean Difference	p
Factory Workers	4.29	.864	28.071	326	1.341	>.001
Mechanics	3.72	1.234	11.279	326	.769	>.001
Housekeepers	3.60	1.199	9.807	326	.650	>.001
Construction Workers	3.42	1.345	5.042	326	.375	>.001
Farmers	3.20	1.243	3.587	326	.247	>.001
Sex Workers	3.16	1.558	2.400	326	.207	.017
Taxi Drivers	3.06	1.361	1.447	326	.109	.149
Soldiers	2.95	1.478	0.060	326	.005	.952
Mean for all	**2.94**	**0.569**				
Teachers	2.71	1.127	-3.897	326	-247	>.001
Police/ Firefighters	2.65	1.380	-3.944	326	-.301	>.001
Retail Sales	2.65	1.106	-4.921	326	-.301	>.001
Actors/ Singers	2.35	1.357	-8.004	326	-.601	>.001
Childcare Providers	2.31	1.238	-9.400	326	-.643	>.001

Airline Pilots	2.17	1.235	-11.348	326	-.775	>.001
Artists/ Authors	2.09	1.224	-12.402	326	-.839	>.001

Table created by the authors.
Note: Where 1 = Very little chance of HRs replacing humans and 5 = Great chance of HRs replacing humans.

As shown in Table 7, statistically significant mean differences from the grand mean of all occupations exists for all professions except Taxi Drivers and Soldiers. The data in this table indicates that respondents believe that the chance of HR replacing humans varies across the types of jobs that they may one day be required to perform. It appears that those professions where respondents felt that there was the greatest chance of HRs replacing humans tended to be those in which the worker was likely to perform repetitive tasks such as those often encountered in factory work, mechanical repair, housekeeping, construction and farming. Jobs where emotional labor and rational choice such as artists, authors, pilots, childcare providers, actors and singers were perceived as roles less likely to be filled by HRs replacing humans. Based on the results of the analysis, there is support for the hypothesis that the perceived chance of HRs replacing humans varies significantly by the type of profession involved. H_5 is partially supported.

V. CONCLUSION AND SUGGESTIONS FOR FUTURE RESEARCH

All of the hypotheses proposed in this study received at least partial support. Statistically significant differences were found in mean responses to receptivity statements for the groups examined. The results of each of the tests are summarized in Table 8.

Table 8: Hypotheses and Results

Hypothesis	Result
H_1: There will be statistically significant difference in ratings of the receptivity statements by gender.	Partially Supported: 16 of 28 Statements
H_2: There will be statistically significant difference in ratings of the receptivity statements by year in college (Freshman, Sophomore, Junior and Senior).	Partially Supported: 4 of 25 Statements, 4 of 144 Pairings
H_3: There will be statistically significant difference in ratings of the receptivity statements by where the respondent was raised, in Phnom Penh vs. other provinces.	Partially Supported: 5 of 25 Statements
H_4: There will be statistically significant difference in ratings of the receptivity statements by work experience (Greater than or equal to 1 year vs. less than one year).	Partially Supported: 6 of 25 Statements
H_5: There will be statistically significant differences in the ratings of how well HRs will perform and replace humans in various occupations.	Partially Supported: 13 of 15 Occupations varied significantly from the grand mean

Table created by the authors.

This is a pioneering study that provided the first empirical presentation of the cultural sensitivity to HRs in Cambodia. It is also one of very few studies on this subject that focused on a nation in Southeast Asia. Unlike most of the prior literature, this study focused on interpersonal factors involving home and not just the workplace. It also was unique in allowing respondents to identify specific occupations with regard to perceived job displacement. The results indicated that the variables of gender, year of study, location where the respondent grew up (rural v. urban), and work experience provided significant statistical differences in support of the impact of those variables as to receptivity. There were also statistical differences as to how the respondents rated HRs by occupation in terms of the potential for job displacement of humans. Most of the independent variables tested were unique for this study and, therefore, prevented comparison to prior literature. However, as to gender, this study matched those studies that found that females were less receptive to HRs than males.

This study was limited in that the undergraduate program of only one educational institution, specializing in accounting and finance, was examined. Being more tech-savvy and educated, the sample population, situated in Phnom Penh (the country's business and technological center), was more likely to be familiar with HRs and will be among the first to interact in the future with HRs in the workplace. Therefore, their perceived sensitivity to HRs is important. However, future studies should expand to examine all of the socioeconomic strata and educational attainment levels in the country, including the views of those who live in the provinces (rural areas).

In Cambodia, the adoption of robotics is still in its early stages compared to more developed countries in Asia. Cultural receptivity to HRs in that country is shaped by a combination of readiness and trust in technology, societal values, and cultural narratives that need to be examined by business, government, and academia to allow for an effective transformation. As an example, this study indicates the future marketing of HRs in Cambodia will pose a significant challenge due to far less receptivity by females in both the workplace and household environments regarding factors of trust, co-working, friendship, and intimacy.

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