

The Development and Status of Gender Equality in Colleges of China, Malaysia and Japan: Comparation and Prospect

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Abstract: Through intra- and inter-regional comparisons of the results of a questionnaire survey conducted in 13 universities in China, Malaysia, and Japan, this study examines the potential impact of economic and cultural factors on the growth of gender equality in local universities. The findings indicate that universities in economically developed eastern and southeastern districts of China, Selangor of Malaysia, and near Tokyo, Japan, have a greater knowledge of gender equality and related systems. In comparison, universities located in higher educated regions exhibit a higher level of gender equality growth, while more open and inclusive culture atmosphere also lead to higher level of gender equality growth. The findings of significance tests and statistical fits indicate that the questionnaires in this study produced objective and reliable data.

Keywords: College Gender Equality; Far East; Questionnaire Investigation; Regional Comparison

1. Introduction

The growth of the concept of higher education, the key institution for developing abilities in society, is inextricably linked to the development of society's future values. Furthermore, the advancement of gender equality, in tandem with the advancement of human technical level and social system improvement, has been a growing focus of public attention [1-5] and, to some extent, one of the indicators of a country's or region's development level [6, 7]. As a result, statistics and research on present attitudes and awareness of gender equality among university students are critical for projecting the future development trend of associated indicators in the country and society, and fostering future societal harmony and stability. The Far East has the most complex demographic structure [8] and social structure [9] in the world, as well as a large number of ethnic groups and complex distribution [10], and factors such as economy and culture may have evident influences on the development and construction of gender equality. Therefore, this study investigates the development level and perceptions of gender equality within universities in the Far East to understand the trends and extent to which economic development, educational attainment of the population, and cultural openness influence gender equality.

2. Methodology

2.1. Design of the Questionnaire

Table 1: Experimental data of sensor measurement accuracy

Question Number	Question	Option Designs	Design Target
1	Gender Equality is always concentrated by your university	Strongly Agree	To understand the participants' perception of the development level of gender equality at the university level
		Agree	
		Disagree	
		Strongly Disagree	
2	Your university have completed policy and student unions to make sure	Strongly Agree	This question should be relatively consistent with the answer to question 1, both "agree" and "disagree," otherwise it will be regarded as an invalid questionnaire.
		Agree	
		Disagree	
		Strongly Disagree	

	Gender Equality		
3	Your university's students have basic knowledges about Gender Equality	Strongly Agree	To understand the developmental cognition of the participants' awareness of gender equality in a small group of people around them
		Agree	
		Disagree	
		Strongly Disagree	
4	Gender Equality is an important part for society's development	Strongly Agree	Understand the development level of gender equality awareness in the local society in which the participants live
		Agree	
		Disagree	
		Strongly Disagree	
5	Your university name, if convenient	China: Beijing Normal University Minzu University of China Xi'an Jiaotong University Sichuan University Wuhan University Fudan University Shenzhen University	Further understanding of the colleges and universities where the participants are located, combined with the economic and cultural data, can explore the potential correlation between the development level of gender equality and economic culture
		Japan: Kyushu University Kyoto University Hokkaido University	
		Malaysia: Monash University Malaysia Campus University of Malaya University of Technology Malaysia	
6	What's your Gender Identity	Male gender identity	Understand the difference in gender cognition and the difference in recognition of the development level of gender equality
		Female gender identity	
		No gender identity	
		Other gender identities	

2.2. Distribution of the Questionnaire and Filtering the Results

The questionnaire was primarily distributed in China through school forums and online postings (aka. Tieba). A total of 5454 valid questionnaires were obtained after nearly three months of questionnaire collection (a total of 5575 questionnaires were obtained, of which 121 were invalid). The questionnaire was primarily distributed through Facebook in Malaysia, and a total of 2393 valid questionnaires were collected after nearly two months of collection (a total of 2418 questionnaires, of which 25 were invalid). The questionnaire was distributed through major Japanese media outlets (e.g., Ameba) and collected over the course of two months, yielding 2302 valid responses (2315 total questionnaires, including 13 invalid questionnaires). The data was then statistically analyzed based on the questionnaire results as well as the universities and regions where the participants were located. In order to improve the efficiency of questionnaire collection, financial rewards were used to stimulate the respondents' motivation to fill out the questionnaires if applicable.

3. Results And Discussion

3.1 Test of Statistical Significance

This study conducted significance tests based on the questionnaire designed to retain the judgment to distinguish invalid questionnaires and verified the non-significant bias of the questionnaire using the Shapiro-Wilk test to ensure that the obtained data are statistically significant. The T-test was used to conduct the significance test for the third question (Q3) in the most different result between China's backward region (Northwest) and Japan's developed region (Kyoto), and the p-value was greater than 0.9999. While there is a visible difference between the two groups, this data shows that insufficient to create a statistically significant difference. It can also demonstrate that the difference in sample sizes is minor. Afterward, a randomly selected question (e.g., using question one, Q1) was used to perform a two-way ANOVA test on the within-group statistics, and it was found that the within-group differences were statistically significant. However, the between-group differences were still small and not significant.

The Shapiro-Wilk test was used again to confirm the questionnaire's bias during the survey process. The conclusion revealed that all groups of data could pass the normality test. The trend of the data points in the Q-Q plot obtained by fitting the predicted values in the Shapiro-Wilk test to the questionnaire results, on the other hand, was more consistent with the $y = x$ curve fit, indicating that the questionnaire was less biased and the data was credible as show in figure 1.

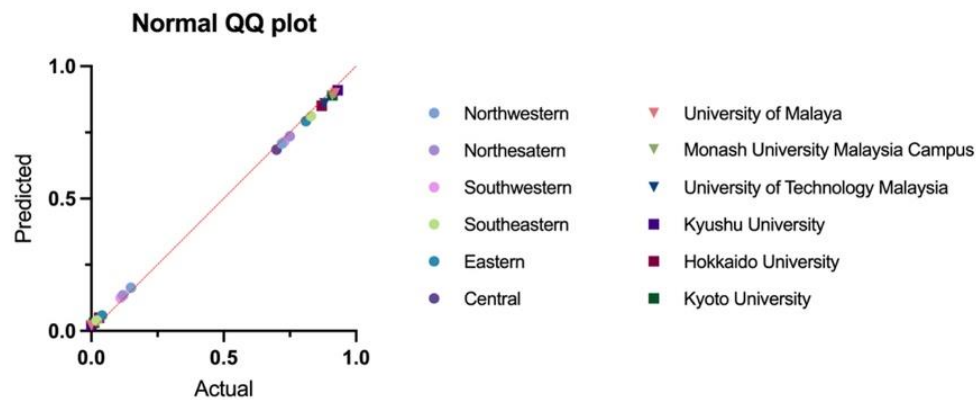


Figure 1: The Q-Q plot obtained from fit results of Shapiro-wilk test's predict value and questionnaire data, shows similar tendency with $y = x$ curve. Which indicated that questionnaires' inclination is unobvious

3.2 Inter-countries Comparison

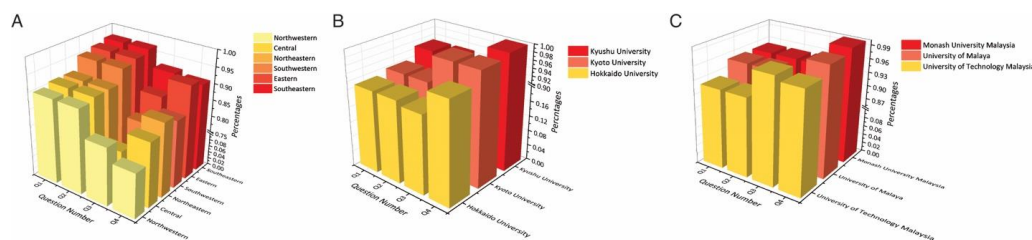


Figure 2: The questionnaires' positive results of China (A), Malaysia (B) and Japan for question 1-4

Here, this study contends that cultural and social structure differences within regions are minor compared to the above differences between regions, so by comparing data differences within regions, the correlation between regional economic development differences and gender equality development level in colleges and universities in that region can be investigated. Figure 2 A shows that the gender equality difference between men and women in Chinese colleges and universities shows a noticeable step change, and the Q3 and Q4 data also broadly show a step-change relationship, in order of positive level from highest to lowest: southeast region, east region, southwest region, northeast region, central region, and northwest region, in order of positive level from highest to lowest. This order is also consistent with the GDP ranking of Chinese provinces and cities to some extent [1]. By comparing Q1, Q2, and Q4 in Figure 2 B, all show a downward stepped distribution from Monash University Malaysia Campus in Selangor, the most economically developed state in Malaysia, to University Technology Malaysia in the north, which is also roughly in line with the economic distribution of Malaysia [11]. Moreover, Figure 2 C also shows a step-wise distribution from Kyoto University in the Kyoto region of Honshu Island to Hokkaido University in northern Japan, which further corresponds to the correlation between the local economic development level and gender equality development level in universities in the region [12].

3.3 Intra-countries Comparison

By comparing the gender equality awareness development level of men and women in colleges and universities between regions with similar economic development levels, the effect of controlling for economic differences on gender equality development can be effectively excluded, and the effect of cultural factors on gender equality development in colleges and universities can be shown. Meanwhile, since gender equality awareness is more associated with individuals or family lifestyle and living standard [13], this study uses the annual per capita household income and expenditure ratio to evaluate

the economic development level in the comparison here. According to the Global Economic Database (CEIC), the household expenditure to income ratio is 0.772 in China, 0.664 in Malaysia, and 0.509 in Japan [14]. Therefore, China and Malaysia are selected here as two comparisons.

However, because there is no clear quantitative criteria for evaluating traditional cultural awareness in society, one part of the quantitative criterion for cultural factors is the educational attainment of Chinese and Malaysian inhabitants. According to the National Bureau of Statistics of China's seventh census data, the average number of years of education per person over the age of 15 is 9.91 years (2020 data) in China [15], 13.7 years (2020 data) in Malaysia [16], and 15.2 years (2020 data) in Japan [17]. Furthermore, due to the impact of the Nara era (Tang Dynasty) reform [18] and Chinese migration southward in around 20th century [19], Japanese and Malaysian cultures share certain features with traditional Chinese culture, making this comparison more credible.

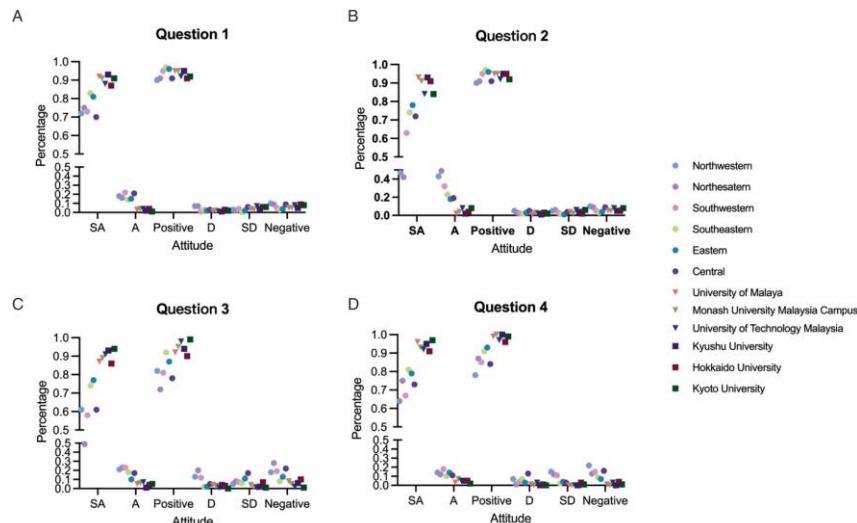


Figure 3: Results comparison of question 1-4 among different countries/districts' areas. SA: percentages of strongly agree; A: percentages of agree; Positive: mixture of strongly agree and agree; D: percentages of disagree; SD: percentages of strongly disagree; Negative: mixture of strongly disagree and disagree

From Figure 3, it can be seen that the percentage of the number of SA (strongly agree) in the middle is significantly lower in Chinese colleges and universities than in Malaysia. In contrast, the percentage of positive intentions is similar to Malaysia in Chinese universities. This means that the development of gender equality in Malaysian universities is slightly higher than that in China. The difference in statistics in this study is relatively small compared to the difference in educational attainment between the two regions. Based on this, the effect of educational attainment per capita on the construction of gender equality can be considered relatively small or negligible. However, the above graph shows that the economic differences between Malaysia and Japan are relatively significant. Nevertheless, the percentages of "strongly agree" and "positive" are similar, showing that education per capita is still not negligible during the building of gender equality.

3.4 Linked Comparison

By comparing information from places with similar cultural and social structures, the preceding discussion demonstrates that the economic development level correlates with the gender equality development level in colleges and universities. Furthermore, it was proven that cultural elements connected to educational attainment had a slight but non-negligible correlation with the gender equality development level in higher education by comparing regions with similar levels of economic development. Then, because Malaysia has a relatively high proportion of Chinese culture [20], as well as the average household income-to-expenditure ratio in the country is in the middle of China and Japan; as a result, Malaysia is used as a medium for comparing Chinese and Japanese statistics in order to reflect another aspect of cultural factors: the relationship between cultural openness and gender equality development in colleges and universities.

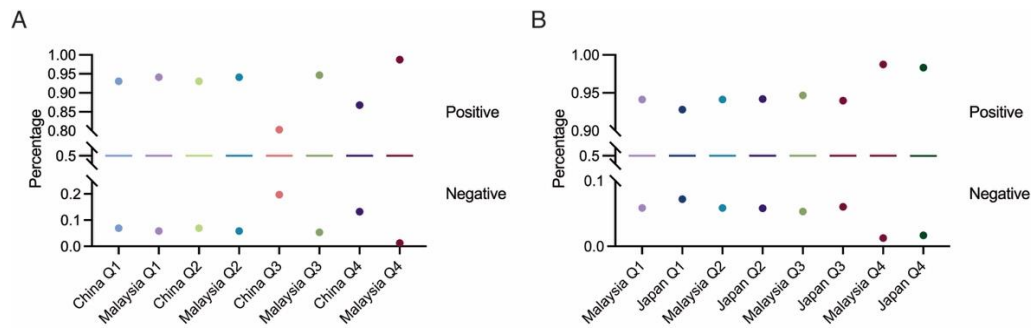


Figure 3: Based on the open and inclusive of Malaysia's culture and social structure, so that take it as media to compare with China and Japan. A: the comparison between Malaysia and China. B: the comparison between Malaysia and Japan

The results in Figure 4 show that Malaysia obtained slightly more questionnaire results with positive attitudes towards the gender equality level in higher education compared to China and Japan. Malaysia has a higher gender equality development level compared to the region, which proximately justifies the previous discussion. However, while local residents have slightly lower educational attainment than Japanese nationals, cultural factors related to the gender equality development level in colleges and universities and educational attainment do not have a significant correlation, and Malaysia's indigenous culture's more open culture and social ethos, formed during a period of historical and social change at the intersection with Chinese, Islamic and Western cultures [21] is more likely to be the cause of this contrasting phenomenon. Furthermore, when comparing the eastern and southeastern regions of China with similar economic volumes, it can be seen that the Shenzhen Special Economic Zone, which is more open and inclusive in terms of policies, has a higher gender equality development level in colleges and universities, which corresponds to the correlation between the cultural openness condition and gender equality development in colleges and universities.

4. Conclusion

In summary, this study found that the economic development level has a high correlation with the gender equality development level in colleges and universities by comparing statistics from regions with similar cultural and social structures, based on questionnaire statistics from 13 colleges and universities located in different regions of China, Malaysia, and Japan. After confirming the credibility and objectivity of the questionnaire results, this study found that the economic development level has a high correlation with the gender equality development level in colleges and universities by comparing statistics from regions with similar cultural and social structures. Cultural elements associated to educational achievement have a slight but non-negligible correlation with the gender equality development level in higher education, according to a study that compared regions with similar levels of economic growth. Later, the association between the cultural openness condition and the openness towards gender equality in colleges and universities in the region is demonstrated by comparing the results of research studies in China and Malaysia with the results of research studies in Japan and Malaysia. Furthermore, the findings and discussion show that economic considerations have a greater impact on the gender equality level elevation, but cultural elements related to educational achievement have a lesser impact.

The level of economic development in the region where the university is located has an impact not only on the importance of gender equality in the local social culture but also on the amount of local assistance received by the university, which has an impact on the funds available to ensure gender equality. The prominence of universities in the region and the development of gender equality in universities will be influenced to some extent by the level of education. The cultural openness condition influences the inclusion of the institution's environment for cultural change, and thus the level of barriers to the growth of gender equality. As the three factors affecting the development of gender equality in local colleges and universities revealed in this study, economic development level, average level of education, and cultural openness condition of the region may draw the attention of stakeholders, promote the creation of an environment conducive to the realization of gender equality in colleges and universities, ensure the positive guidance of talent cultivation in society, and help further emphasize the importance of "the Beijing Declaration" [22] by United Nations and "Platform for Action" [23] and promote their implementation and realization.

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