Women's labor force participation in Malaysia: Does higher educational attainment make a difference?

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ABSTRACT

Despite various efforts, women's participation in the labor force remains significantly lower than men's, with over 80% of men globally engaged in the labor force compared to around 50% of women. Numerous initiatives at national, regional, and global levels aim to achieve gender parity across various aspects of life, including education and employment, which is a core objective of the 17 Sustainable Development Goals (SDGs) launched in 2015 and targeted for completion by 2030. While women have increasingly dominated tertiary education in several countries, including Malaysia, this progress has not translated into equivalent improvements in labor force participation. This paper investigates the mismatch between women's educational attainment and their participation in the labor force, seeking to answer the fundamental question: Does higher education for women make a difference? Data from sources such as the World Bank, the World Economic Forum, and the Department of Statistics Malaysia were analyzed, alongside theories like human capital, the U-shape hypothesis, and signaling theory to conceptualize the education-labor force relationship. Findings indicate that the gross enrollment rate of women in Malaysia increased from 28% in 2000 to 46% in 2022, compared to 26% and 35% for men in the same years. Furthermore, labor force participation rates for those with tertiary education rose from 71.7% in 2013 to 82.6% in 2022 for men, and from 61.4% to 66.2% for women during the same period. These results demonstrate that although educational attainment has narrowed the gender gap in labor force participation, significant disparities persist. The findings emphasize the need for policymakers to address socio-economic, cultural, and demographic barriers that hinder educated women from fully participating in the labor force, especially in Malaysia and similar Muslim-majority countries.

1. Introduction

Planners and policymakers worldwide are more concerned about the lower rate of women's participation in the labor force despite their rapid increase in higher education. This is because women represent more than half of the world's population, yet their contribution to economic growth is below their potential (Bills, 2018). It has been documented that if all women of working age have access to jobs, it will increase the world economy and reduce all socio-economic illnesses like poverty. As indicated by Thaddeus et al. (2022), the full participation of

women in the labor force will improve the nation's social and economic standing, leading to the empowerment of women, which in turn promotes equity and boosts the utilization of human potential, hence fostering economic growth and reducing poverty. Available data worldwide confirmed the low participation of the female labor force and an inferior employment status for women. According to the ILO (2022), the global labor force participation rate is about 66%, while it is 53% for women and 79% for men, with a 26% gender gap. To close this huge gap, several laws and policies have been adopted to empower women and reduce gender disparity, mostly through education.

Addressing gender inequality, mainly in education and the labor force, has become one of the fundamental objectives of the 17th Sustainable Development Goals (SDGs) launched in 2015, to be achieved by 2030 (UN, 2022). As documented by Taheri et al. (2021), the elimination of the gender gap in labor force participation has become one of

the main challenges of achieving the SDGs in the 2030 Agenda for Sustainable Development. For example, goal four focuses on quality education, "ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all." Specifically, target three of the fourth goal (4.3) ensures that both women and men have equal access to affordable and quality technical, vocational, and tertiary education, including enrollment in universities. In addition, the fifth goal is achieving gender equality and empowering all women and girls. It is stated clearly in the first target (5.1), "ending all forms of discrimination against all women and girls everywhere". Also, goal eight aims "to promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all". The tenth goal intends to reduce inequality between and among countries. Explicitly, the second target (10.2) is "to empower and promote the social, economic, and political inclusion of all by 2030, irrespective of age, gender, disability, race, ethnicity, origin, religion, economic status, or other status". Many efforts have been made by the assigned countries, including Malaysia, to meet the SDG commitment and address gender inequality.

Available literature has shown that the relationship between education, economic development, and female labor force participation (FLFP) is often debatable. In other words, there is no positive or negative linear relationship between these three angles. The economic status of the country is a very essential element in judging this relationship. Several studies have confirmed that an increase in economic development will speed up the opportunities for educated women to enter paid work and vice versa. This implies that education is a key factor in furthering the contribution of females to the labor force. According to Shuangshuang et al. (2023), education plays an essential role in furthering FLFP in the long run. Also, Beton Kalmaz (2023) argued that education facilitates increasing female labor force participation in Turkey, as they are favorably connected. In the same vein, it is approved that higher education can liberate women from low-paying jobs to higher-paying job opportunities. On the relation between economic growth and the enrollment of females in higher education, Bills (2018) argued that an increase in economic development would surge female enrollment in higher education. In the same line, Salleh and Mansor (2022) stated that higher women's economic engagement increases women's access to higher-productivity industries and occupations and accelerates global economic growth. In contrast, the negative relationship between education, economic development, and FLFP has been documented in some Muslim nations. For example, Assaad and Krafft (2013) found that the FLFP rate fell even though women's educational attainment has increased. According to the World Bank, in Egypt, which is experiencing significant improvements in education levels with higher

graduation rates, labor force participation did not increase due to the poor economic growth. In the case of Iran, although Iranian women are receiving higher levels of education, this has not been demonstrated in FLFP. The same destiny appeared in Pakistan; there is a negative relationship between educational attainment and female labor force participation in Pakistan. About Indonesia, Shuangshuang et al. (2023) demonstrated that economic growth has no impact on the female labor force participation rate in 34 provinces of Indonesia. This negative relationship is not found only in Muslim countries, but also in some nations like India. Bhalla and Meher (2019) suggested that though there has been a constant rise in the educational level of women in India, the employment rates have not increased at a similar pace. The data from the World Bank (WB, 2021) confirmed the negative relationship between the Gross Domestic Product (GDP) and female labor force participation. As indicated the South Asia has experienced the highest GDP growth rate, from 4.1% in 2000 to 8.3% in 2021; however, the region had the second lowest labor force participation of women (25.1%).

Malaysia is one of the Muslim countries that has witnessed massive enrollment of females in higher education, and now the situation is even more revered (Elhadary and Samat, 2023). Despite this fact, the participation of women in the labor force is much lower compared to men (Elhadary and Ahmed, 2024). Currently, the labor force participation rate is 68.6%, with a high rate of 80.9% among males and only 55.5% among females. This is not far from the ILO (2022) data, as the female labor force participation rate (population ages 15–64) is 56.3% and the male is 81.8%, while the total is 69.4%. Furthermore, the percentage of the labor force with tertiary education increased from 71.7% in 2013 to 82.6% in 2022 for men, and from 61.4% to 66.2% for women during the same period. This shows that many women with higher education are still not entering paid employment. This gap raises important questions about why women's participation in the labor force remains low, even though more women are attending higher education.

The main aim of this paper is to explore the actions taken by different Malaysian governments to increase FLFP and to examine the gap between women's educational achievements and their actual employment. The paper specifically seeks to answer two key questions: Why are more women enrolling in higher education? And does higher education help women participate more in the labor force? The following sections aim to answer these questions and present theories that explain the link between education and labor force participation.

2. Female in the labor force participation: Theoretical perspectives

This section discusses theories that explain the relationship between education and FLFP. Existing literature identifies three main factors influencing

women's participation in the labor force: level of education (measured by years of schooling), economic growth, and socio-demographic factors. In this paper, socio-demographic factors are only briefly addressed. The focus is primarily on theories that emphasize the role of education in shaping FLFP. Specifically, the paper highlights Human Capital Theory (HCT), U-Shape Theory, and Signaling Theory (ST). These theories consider education a key factor in enhancing productivity (as suggested by HCT) and in helping employers distinguish between potential workers (as proposed by ST). Further explanation of these theories is provided below.

2.1. Human capital theory (HCT)

The theory dates to the work of Schultz (1960) and Rosen (1976). It suggested that education has a positive causal effect on student ability, which, in a competitive labor market, translates into higher earnings. Moreover, it assumes that everyone has an "innate ability" that can be extended to (1) prior participation in the labor force through education, (2) employment through on-the-job training, and (3) experience (Thaddeus et al., 2022). In the same vein, Alias et al. (2021) argued that when student enrollment in the education system increases, participation rates in the labor market would be high. Not only participation but also people with an education earn more compared to those who missed this privilege. As stated by Becker (1993), schooling raises earnings and productivity mainly by providing knowledge, skills, and a way of tackling problems.

Regarding gender, the theory argued that educating females would increase the productivity of women at home (Becker, 1993) and in the workplace (Schultz, 1960). According to the theory, females with middle school or higher education have more economic advantage than those without formal education (Nam, 1991). This is because with education, women acquire better skills, and their labor force participation rate rises, leading to a rise in their savings (Pal and Chaudhuri, 2020). Moreover, education provides women a greater opportunity to earn higher wages, which in turn increases women's labor force participation. In contrast, when women are poorly educated, their only wage labor outside the home and family is in manual work, against which a strong social stigma exists. However, when women are educated, particularly at the secondary level, they enter white-collar work, against which no social stigma exists (Goldin, 1994). This paper uses this theory to compare the massive enrollment of female in higher education with their participation in the labor force. Specifically, it is to highlight the relationship between the levels of higher education and female participation in the labor force.

2.2. U-shape theory

This theory confirms that there is a connection between three variables: education, economic development, and the participation of females in the labor force. It is almost like the Human Capital Theory, but slightly differs as it assumes there is a mutual relationship between females in the labor force and economic development. The origins of theory date to the work of Sinha (1965). Sinha (1965) observed that the traditional economy has high female participation, which tends to fall during the early stages of development before declining when shifting to urbanization and non-agricultural production. Then the upward portion of the U-shaped curve occurs when women return to the labor force at advanced stages of development to fill service sector jobs (Fatima and Sultana, 2009). In the same line, Thaddeus et al. (2022) affirmed that in the initial stage of economic growth, where limited access to education brought forth a low-skilled population, the agricultural sector was very productive. Nevertheless, as the economy moves to the industrial sector, female participation falls and then rises when it shifts to the services sector. The low participation of females in the industrial stage is due to the underrepresentation of females in education. This result confirmed the positive link between the level of education and the labor market. This led Pal and Chaudhuri (2020) to argue that through education, more women can access the labor force, which in turn improves productivity and enhances economic growth.

Several studies have provided empirical evidence that the female labor force participation rate exhibits a U-shape during the process of economic development (Goldin, 1994; Fatima and Sultana, 2009; Pal and Chaudhuri, 2020). Fatima and Sultana (2009) explored the existence of a U-shape relationship in the case of Pakistan. Their findings affirm that the high rate of economic development is encouraging female participation in the labor force. They added that females are taking full advantage of these opportunities by increasing their level of educational attainment. Also, Thaddeus et al. (2022) argued that a causal relationship exists between female labor force and economic growth in sub-Saharan Africa, and the direction of causality is unidirectional, running from economic growth to the female labor force. By contrast, several empirical studies found that the U-shaped relationship was not applicable in some countries, particularly those that put high social and religious restrictions on women's desire to work. Doğan and Akyüz (2017) investigated the relationship between economic growth and female participation in Turkey and reported a reverse U-shaped relationship. The same result was found in India; as indicated by Sundari (2019), the "U" curve does not find empirical evidence in the case of Tamil Nadu. There is an inverted "U" curve with a strong negative relationship between the expansion of female education and a lack of job opportunities. Also, Saqib (2016) argued that the fast economic growth of Saudi Arabia is not enough to increase female participation in the labor force. Moreover, Idowu and Owoeye (2019) studied twenty African countries,

and their findings affirmed that there is an inverted U-shaped relationship. Recently, Claudia Goldin, the winner of the Nobel Prize in 2023 for her work "women's labor market outcomes over time," has pushed back against the widespread view that female employment rates are positively related to economic development. In the case of Malaysia, Pampel and Tanaka (1986) argued that women are excluded from early industrial jobs due to physical limitations, gender discrimination, and the domestic demands of large families until white-collar jobs emerge that reward education. This dichotomy offers the paper a chance to see if a U-shaped theory is applicable in the case of Malaysia or not. Specifically, to trace whether massive enrollment in tertiary education increases the demand for women's labor force or not.

2.3. Signaling theory

HCT and U-shape theories have been criticized as they concentrate only on the idea that education is the sole factor in increasing productivity. Yes, it is true for a few jobs that have a direct link to the disciplines, like engineering and medicine, or jobs based on scientific knowledge, such as academic staff and researchers. However, most of the employees occupied jobs that had nothing to do with the degree they obtained or were not directly related to their specialization. Every year, 40–70% of available vacancies demand a degree in any discipline because the knowledge content of the student's degree is immaterial to the position. Only 27 percent of undergraduate degree holders are working in a job directly related to their college major. This argument is supported by career adviser Stacie Haller, who stated that one-third of the recent college graduates are working at jobs that don't require a college education. This ongoing debate regarding the link between education and labor force has led to the appearance of ST. According to Arrow (1973) and Spence (1974), employers use educational attainment to identify individuals with certain valuable 'innate' traits that cannot be observed directly. They argued that education per se does not enhance productivity; rather, employers use it as a signal about an applicant's potential productivity, including their ability to learn during the job (Pericles Rospigliosi et al., 2014). Economists offer two main explanations for the causal labor market returns to education. The first is human capital accumulation: education improves ability. The second is signaling: education allows high-ability students to distinguish themselves. This assumes that university graduates have acquired the "ability" to think critically and the skills to test ideas. Thus, "ability" is used to identify workers as not limited to intelligence but rather any quality that makes someone a more productive employee (Spence, 1974). Moreover, the degree obtained provides other signals that are relevant to employer preferences, including the perceived quality of the institution where a degree is obtained.

Both HCT and ST have addressed the causal relation between pursuing education and participation in the labor force. The signaling theory postulates that education has no direct effect on productivity, while the human capital theory claims that education raises wages by increasing productivity. This is because individuals acquire knowledge and useful skills during their studies. This led Pericles Rospigliosi et al. (2014) to raise the question: why are graduates more productive? The answer concentrates on the fact that graduate workers have both the ability and willingness to learn, are self-managed, and have developed that ability during their education. This explains why most of the current graduates are running after obtaining certificates rather than learning new skills, concepts, and material. Thus, the shift to the "universal" stage in education will leave no room for employers to distinguish the potential of the productive graduate. In this regard, employers have no option but to search for other signals, which in this case might obtain postgraduate degrees (Master's and PhDs) rather than just a diploma or bachelor.

This section concludes that both HCT and ST are useful, especially when it comes to the participation of females in the labor force market. For the former, acquiring higher education is considered one of the most essential factors in joining the labor force, while having college credentials helps females signal their ability in a workforce dominated by men. As argued by Lang and Manove (2011), employers find it more difficult to assess the productivity of female workers in a male-dominated labor market. Thus, education is more important for signaling ability and helping females to escape gender discrimination in the labor market (Nielsson and Steingrimsdottir, 2018). A common critique of the signaling model is that, if education is largely about signaling, then employers should be able to find far less expensive ways than education to identify high-quality workers. Moreover, education does not just signal easy-to-measure things like intelligence but a host of wider, inherently unobservable characteristics such as conscientiousness (Lang and Kropp, 1986). Detailed information on the connection between these theories and their relation to the female labor force can be found in the following section.

3. Methodology and materials

This paper primarily uses relevant statistical data obtained from both national government agencies and international organizations. The national sources include the Department of Statistics Malaysia, the Ministry of Education Malaysia, and STATISTA Malaysia. While the international actors incorporate the UN (2022), and the International Labor Organization (ILO, 2022). The collected data is organized in tables. Then the paper employed simple statistical analysis like means and percentages, aiming to highlight the findings and at the same time facilitate comparisons among genders. It also

includes a critical review of the most recent research and studies on higher education and labor force published in and out of Malaysia, as shown in the methodical framework (Fig. 1). Fig. 1 starts by showing the overall objective of the paper, which is to address the relation between female enrollment in higher education and their labor force participation. This is followed by viewing the various sources of the collected data, which are divided into two: documents (text) and statistical types. With the help of HCT, U-Shape, and Signaling Theory, the paper has

made deep analyses and interpretations. To put the paper in the global context and to compare the situation of Malaysia with that of other world and regional countries, some indicators of female labor force participation have been gathered from the World Economic Forum reports. The paper has come out with some conclusions; for that, education is not the sole factor in expanding female labor force participation in Malaysia and in other Muslim countries.
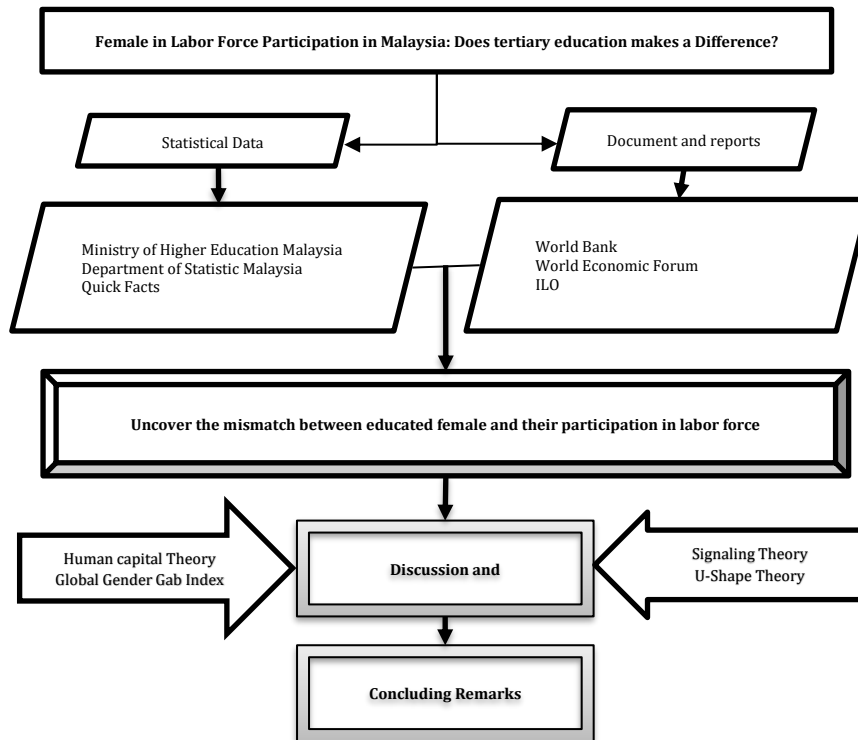

Fig. 1: Methodological framework

4. Result and discussion: Women's disparity in the labor force: Does higher education matter?

Several studies and available data have shown that the number of females enrolled in higher education in Malaysia and, like elsewhere in some developing countries, surpassed that of males (Elhadary and Samat, 2023; Elhadary and Abdelatti, 2024; Elhadary and Ahmed, 2024). With reference to the above-mentioned theories, this section aims to highlight the implications of the massive enrollment of females in higher education for participation in the labor force. The analysis is based on the data gathered from the official site of Malaysia named STATISTA. Four levels of education have been selected to uncover the relationship. These four levels include basic, intermediate, tertiary, and advanced education; see Table 1 for more details.

Table 1: Residents' labor force participation rate by level of education, by gender in 2022

Levels of education	Total labor %	Female %	Male %
Basic	63.1	41.4	81
Intermediate	67.7	53.4	80.8
Tertiary	74.1	66.2	82.6
Advance	77.9	72.2	84.9

Table 1 shows significant differences in FLFP across education levels. Women with university degrees have the highest participation rate among the four education groups. In 2022, Malaysian residents with no formal education had a labor force participation rate of 56.1%, while those with tertiary education reached 74.1%. This supports the view that higher education is positively associated with women's participation in the labor force.

However, the participation of women with basic and intermediate education remains considerably lower than that of university graduates, forming an L-shaped relationship—low participation at the lower education levels and higher participation at the tertiary level. This pattern is consistent with findings by Li and Bakar (2021), who observed that Malaysian women with higher educational attainment are more likely to join and remain in the labor force.

Despite this, a gender gap persists. For instance, in 2022, women with tertiary education had a labor force participation rate of 66.2%, compared to 82.6% for men. This disparity is particularly striking given that a higher proportion of women (47.3%) than men (35.8%) held tertiary qualifications. As Pal

and Chaudhuri (2020) argued, this paradox contradicts the expectations of HCT, which posits that higher education should enhance skills and improve labor market outcomes. The authors highlight that structural and institutional barriers may limit the translation of educational gains into employment opportunities for women.

Two important points emerge from this analysis. First, there is a positive correlation between education and FLFP. Second, higher education does not guarantee labor market entry for all women. Approximately 35% of female university graduates in Malaysia were not part of the labor force in 2022, compared to only 17% of male graduates. This suggests a clear mismatch between women's educational attainment and their actual labor force participation. One possible explanation is that employers may favor less-educated workers due to lower wage expectations, making it more difficult for highly educated women to find suitable employment.

The previous section demonstrated that the number of women graduating from universities now exceeds that of men. However, this advancement has not translated into a corresponding increase in women's participation in the labor force. This raises two important questions: first, why do educated women have fewer opportunities to enter paid employment? And second, why are more women continuing to pursue higher education?

In response to the second question, Taheri et al. (2021) suggested that higher education empowers women by helping them overcome traditional family and societal restrictions and by enhancing their bargaining power in both marriage and the marriage market. Despite these social benefits, higher education has not significantly improved women's outcomes in the labor market.

Regarding the first question, several factors continue to limit women's full participation in paid work. One of the key reasons is that, unlike men, the decision for women to join the labor force is often made collectively within the family rather than individually. Elhadary and Ahmed (2024) supported this by noting that women's employment choices are influenced not only by their own preferences but also by those of other family members and the dynamics of household decision-making. Similarly, Heath et al. (2024) emphasized that for many women, especially in Muslim-majority countries, working outside the home remains a complex and often restricted option.

In addition to family influence, several broader factors contribute to the gender gap in labor force participation. Halim et al. (2023) identified three main types of constraints that hinder women's employment. These include limitations on the supply side, such as time constraints caused by childcare and household responsibilities, as well as restrictions on mobility for work. On the demand side, women often face mismatches between their education and the skills required by available jobs, along with gender discrimination in recruitment and job retention. The lack of benefits such as maternity leave, childcare support, re-entry programs, and opportunities for career advancement further limits their employment prospects. Contextual challenges, such as cultural and social norms, restrictive laws and policies, and the risk of gender-based violence, particularly sexual harassment in the workplace, also act as significant barriers.

Finally, socio-demographic factors such as household income, family structure (nuclear or extended), and family size further influence women's ability to participate in the labor force, as noted by Akhtar et al. (2020).

Among the contextual factors, cultural norms are widely recognized as a major reason for the low participation of women in the labor force. According to Li and Bakar (2021), cultural and traditional values in Malaysia contribute to the decline in female labor force participation. A similar situation is observed in Iran, where Taheri et al. (2021) explained that gender norms, attitudes toward working women, and the traditional division of family responsibilities are key factors behind the stagnation in female labor force participation.

The cultural norms that limit women's employment can take different forms but often revolve around three main ideas: restrictions on women's social interactions and mobility, the belief that men should be the main financial providers, and the expectation that women should be primarily responsible for childcare and household duties (Jayachandran, 2020). These norms vary not only between countries but also within the same country or even between communities. For example, in Odisha, India, two neighboring villages hold very different views—one supports women working outside the home, while the other opposes it.

This global issue has led Bursztyn et al. (2023) to propose that changing public beliefs about women's roles could be an effective way to increase their participation in the workforce. Other contextual barriers include workplace harassment and lack of access to safe and affordable transportation. Christensen and Osman (2023) found that in Cairo, Egypt, concerns about travel safety influence women's decisions about pursuing higher education.

Importantly, these challenges are not limited to Muslim-majority countries. Workplace harassment is also reported in Western societies. For instance, Folke and Rickne (2022) reported that 12.6% of women in Sweden experienced sexual harassment at work within a 12-month period. In Uganda, 90% of women surveyed across 2,910 organizations reported being harassed by male supervisors.

Regarding the demand side constraints, the views circulating among employers are that women are weak, non-productive, and cannot contribute substantially to development. Some even believe that when they employ females, they will take numerous maternity leaves, complain about their families, and may be unable to concentrate on their jobs (Petersen and Thea, 2006). In Malaysia, the common belief until the 1960s was that women were ideally better off as homemakers and, when educated, should be

channeled into teaching, nursing, or other feminine occupations. This type of thinking sheds a negative light on the selection of women for paid jobs and prevents them from doing any challenging tasks. This negative view, coupled with biological instincts, such as pregnancy, marital influence, and childcare, has led some employers not to hire females in their organizations. In this line, Weimann-Sandig (2020) argued that small or middle-sized companies employ women if they are single, although they will only be given limited working contracts. Ningrum et al. (2020) found that in Indonesia, 40% of online jobs specified a preferred gender, and female applicants were more likely to be requested to be single or of young age. This led the World Bank to contend that half of married women aged 20 to 55 are in the workforce, compared to over 70% of their single, divorced, or separated counterparts (Yoong, 2020). Numerous women with lower education have been observed to leave their jobs after marriage, particularly those having kids. This is because it is so hard for women to shoulder domestic responsibilities, specifically taking care of children, while simultaneously engaging in paid jobs. Women, particularly in Muslim nations, are shouldering the responsibility of doing housework and caring for children and elderly parents (Salleh and Mansor, 2022; Elhadary and Samat, 2023). Unfortunately, this negative view still widely exists in most the Muslim countries; thus, without addressing this view, closing the gender gap in the labor force remains a distant dream.

On the supply side constraints, the major factor that influences women's decisions negatively or positively is their husbands' economic background. Therefore, the highly qualified husbands may often have highly secured salaried jobs, forcing their wives not to join the market, and vice versa. It has been taken for granted that in Muslim nations, men are responsible for earning money and shouldering their family matters, while women only need to stay at home to take care of their children and old parents (Elhadary and Ahmed, 2023). Women can decide to go to work outside the home only if their husbands are facing financial difficulties in securing the basic needs for their families. Therefore, poor families have positive roles in women's participation in paid work. Bridges et al. (2011) found a positive association between the severity of poverty and the probability of females joining the labor market. They also argued that females who come from extremely poor households have a significantly higher probability of participation compared with those who are not poor. According to Li and Bakar (2021), females in Malaysia tend to enter the labor market to earn additional income to support household income, especially married women when the income is not enough for household expenditure. This result indicates that the participation of women in the labor force is more of a matter of necessity than opportunity. In Bangladesh, the decision of a female to join the workforce is mostly determined by male family members. About the demographic factor, it

has been documented that fertility rate and the number of children have affected both women's labor supply and employers' demand. As stated by Li and Bakar (2021), the fertility rate is the most important variable affecting the female labor force participation rate in Malaysia. In the same line, Taheri et al. (2021) argued that the rapid decline in fertility rates and the substantial expansion in female education were expected to boost FLFP. No one denies the role of the decline in fertility in the escalation of females in the labor force, but not always; there is a positive linear connection between. For example, available data have shown that the rate of fertility worldwide is decreasing, while the rate of women's participation worldwide remains stagnant or slightly increases. As Klasen (2019) noted, the overall correlation between fertility and female entering the labor force is generally flat. This finding showed that the direct decline in fertility is not the sole factor behind the low representation of females in the labor force. This led Aaronson et al. (2021) to claim that the effect of fertility on labor supply depends upon the level of economic development as well as the structure and types of jobs available to women. Therefore, further research is needed to test the link between fertility and the rate of women's participation in the labor force, especially in Muslim countries.

Geographical location, particularly the distinction between urban and rural areas, also influences women's participation in the labor force. Some women refuse jobs that are far from their homes or do not match their personal goals or expectations (Elhadary and Ahmed, 2024). This helps explain why female labor force participation is generally higher in urban areas than in rural ones. Urban areas tend to offer more diverse job opportunities compared to rural regions (Li and Bakar, 2021).

In rural areas, higher fertility rates and traditional gender roles also contribute to lower female employment. Many rural women are engaged in unpaid work such as farming, while also bearing full responsibility for household tasks, including caring for children and elderly family members.

However, urban environments are not always favorable for working women either. Despite better job availability, many educated urban women choose to stay at home due to high childcare expenses, the risk of sexual harassment, and high transportation costs (Taheri et al., 2021).

These differences highlight the need for more research to better understand how geographical location affects women's participation in the labor force.

The above-mentioned section confirmed that females in Malaysia have witnessed rapid enrollment in higher education. Despite this improvement, women's access to the labor force is low compared to men. This paper argued that education alone is insufficient to close the gender gap; thus, planners need to go beyond education to understand why women's participation in the labor force remains low. This led the Nobel Prize winner, Claudia Goldin,

to declare that even more important than access to higher education was the power of the birth control pill. In Malaysia, the number of females enrolled in higher education has exceeded that of males. However, the opposite is true in terms of the workforce. Males not only outnumber females in figures but also earn a higher salary. Olson-Strom and Rao (2020) stated that the biggest challenge with respect to higher education for women in Asia is no longer gender parity in terms of access but gender equality throughout the educational process and in the outcomes. This idea recalls the old notion, which said that girls are taught to be wives and to shoulder the responsibilities of their families. As indicated by Mokhtar (2020), Malay women were too "conservative" to be effective managers. Malaysian male managers believed that Malay women might not be suited to certain jobs or employment areas. In contrast, there are some positive factors that facilitate women's decisions to join the workforce; foremost among these are their level of education, living in urban areas, and being unmarried.

Malaysia must address the socio-economic and political challenges that limit women's full participation in the labor force. The country also needs to prepare for its changing population structure, as the fertility rate is declining and the number of elderly people is rising. Malaysia is expected to become an aging society in the near future. Therefore, it is essential to create employment opportunities for the younger population and to develop strategies for supporting the elderly.

One important solution is to increase female labor force participation. Doing so can help reduce the pressures associated with an aging population and contribute to overall economic development. Research suggests that if all economic barriers facing women in Malaysia were removed, the country's income per capita could increase by as much as 26.2%.

It is important to note that female staff at universities are currently higher compared to men. In 2021, the number of female staff in public universities is 17,961 (56.8%) compared to 13,646 (43.2%) men. These institutions also housed more female students, with a 61 percent occupancy rate. In addition, almost 60 percent of more than 15,000 Higher Education Ministry staff are women. Despite this fact, few get a chance to be a top leader in higher education institutions. The proportion of leadership roles held by females worldwide stood at 19% in 2004, the number rose to 31% in 2021, and 32% in 2022. Out of the twenty public universities in Malaysia, only eleven female deans were appointed as deputy vice chancellors. Two women are from UiTM, Universiti Malaya, Universiti Sains Malaysia, and Universiti Pendidikan Sultan Idris, respectively, and one each from Universiti Kebangsaan Malaysia, Universiti Malaysia Terengganu, and Universiti Malaysia Kelantan. The year 2006 is considered a turning point when the first woman, Datuk Rafiah

Salim, was appointed as vice chancellor of Universiti Malaya. Up to the present, only three women are holding the position of Vice-Chancellor in Malaysian public universities: Prof. Dato' Dr. Nor Aieni Mokhtar of Universiti Malaysia Terengganu, Prof. Dr. Raha Abdul Rahim of Universiti Teknikal Malaysia Melaka, and the latest appointment is Prof. Ts. Dr. Hajah Roziah Mohd Janor of Universiti Teknologi MARA (Badrolhisam and Omar, 2022). The question to be asked is why women are underrepresented in holding top positions at public universities, even though they represent almost 60% of the university staff compared to men. The answer to this question includes, but is not limited to, position requirements, gender roles, and traditional beliefs. The position of vice chancellor requires a professorship and becoming a prominent researcher (Badrolhisam and Omar, 2022), and this is hardly achievable by women.

5. Has Malaysia achieved gender parity in the labor force? An international perspective

To put Malaysia in the international and regional context, this section employed the global gender gap index to answer the fundamental question: has Malaysia achieved gender parity in the labor force? The following section provides details on this measure.

5.1. Global gender gap index (GGGI)

The World Economic Forum has used the measure of the Global Gender Gap Index (GGGI) frequently since 2006 to quantify gender parity across four key indices in at least 146 countries. These four sectors include Economic Participation and Opportunity, Educational Attainment, Health and Survival, and Political Empowerment. The score ranged from zero to one (100%), whereby one indicates full gender parity and close to zero means disparity. Out of the 134 countries surveyed by the World Economic Forum, Malaysia ranked 72nd in 2006 and then declined 40 places in 2021 as it ranked 112th. With a value of 0.682 in 2023, Malaysia ranked 102nd, improving ten places compared to 2021, but still less than that of 2006 when it ranked 72nd (Table 2). In the year 2024, Malaysia ranked 114th, declining 52 places compared to 2006, and fell twelve places compared to 2023. These results suggest that the gender gap situation in Malaysia is worsening and that the country performed better 20 years ago than today. The overall score of the four sectors showed that gender parity in Malaysia is still not fully achieved (0.676 in 2021 and 0.668 in 2024) and was ahead of only 34 and 32 countries, respectively. This implies that 66.8% of the gender gap has been closed, and the remaining to enjoy full equality with men stands at 33.2%. It is interesting to note that Malaysia has achieved gender parity only in educational attainment and is on the right track to achieve the same for health and survival. Malaysia lies within the

top 25 countries that achieved gender parity in education and scored 1.00. In contrast, the country made less progress in economic and political empowerment. Table 2 shows clearly that Malaysia progressed less regarding political empowerment, as

it ranked 134th ahead of only 12 countries. Since its independence and up to the present, no woman has occupied the position of prime minister. More information on this matter and the participation of the labor force is highlighted in Table 3.

Table 2: Malaysia global gender gap index (MGGGI)

Sub-indices	Rank 2006	Rank 2021	Rank 2023	Rank 2024	Score 2006	Score 2021	Score 2023	Score 2024
Economic participation and opportunity	68	104	89	102	0.592	0.638	0.664	0.634
Educational attainment	63	70	1	1	0.985	0.994	1.00	1.00
Health and survival	80	74	80	80	0.970	0.972	0.969	0.969
Political empowerment	90	128	122	134	0.056	0.102	0.098	0.068
Global gender gap index	72	112	102	114	0.651	0.676	0.682	0.668

Table 3: Indicators of female labor force participation in Malaysia

Sub-Indices %	Rank 2010	Rank 2020	Rank 2023	Rank 2024	Score 2010	Score 2020	Score 2023	Score 2024
Labor-force participation rate	105	107	96	102	0.57	0.639	0.664	0.681
Wage equality for similar work	19	20	18	33	0.76	0.744	0.740	0.719
Legislators, senior officials, and managers	75	116	109	110	0.32	0.256	0.331	0.362
Professional and technical workers	83	101	90	103	0.71	0.799	0.851	0.688
Women in parliament	101	121	123	122	0.11	0.168	0.156	0.156
Women in ministerial positions	107	88	88	129	0.07	0.227	0.200	0.080
Total countries	134	153	146	146	134	153	146	146

Table 3 provides detailed information about gender parity in the labor force within the global context. The recent World Economic Forum report released in 2024 showed that Malaysia ranked 102nd in the labor force participation rate, with its score of 0.681. This confirms that Malaysia has declined six places compared to 2023 and is better off than in 2010, as ranked 105th, and 2020 as ranked 107th. This result showed that Malaysia is still a bit far from achieving gender parity in the workforce of today and soon. Nevertheless, it progressed well in addressing wage quality, as it ranked 18th with a score of (0.740) compared to 2024, as it ranked 33rd with a score of (0.719). Despite the improvement of the female-to-male earnings ratio in recent decades, it remains 28% to close the gender pay gap. This means that gender discrimination in the market environment does exist in Malaysia. Several authors relate the progress in the wage gap to the massive attainment in higher education. Achieving more education is thus an important way for women to make up for the gender pay gap. The situation is getting worse when it comes to the position of women in leadership positions and in political participation. Despite the introduction of a quota system (30%) in management, women remain underrepresented at decision-making levels. The participation rate of women in decision-making in the public and private sectors stands at 26.7% (Mokhtar, 2020). Table 3 also showed that women are less represented in parliament, as it ranked 123rd and scored (0.156) in 2023 and slightly changed in 2024, as they progressed only one place; they were ranked number 122. Concerning the legislators, senior officials, and managers, Malaysia ranked number 109th with a score of (0.331) in 2023 compared to 2024, where it ranked number 110th with a score of (0.362). This is even better than 2020, as it ranked

number 116, but less than what was achieved in 2006, as it ranked number 75th. Table 3 also shows that women are less represented among professional and technical workers, as it ranked 90th with a score of (0.851) in 2023 compared to 103rd with a score of (0.688) in 2024. This result shows that Malaysia has declined thirteen places in one year and twenty places compared to 2006. Malaysia has witnessed some progress regarding gender parity. The data collected showed that the country needs more time to achieve full parity in the labor force and its related issues.

Regarding gender parity at the regional level of East Asia and the Pacific, out of 19 countries in 2023, Malaysia ranked 13th, ahead of only six countries: Korea, China, Vanuatu, Fiji, Myanmar, and Japan. In 2024, among 18 nations, Malaysia ranked 16th, ahead of only Japan and Fiji, while New Zealand and Australia placed at the top of the list. With reference to the 2023 report, Malaysia has declined twelve places to 114th by comparison, Indonesia fell 13 places to 100, and the Philippines fell nine to 25. Thailand, however, managed to climb up the list by nine places to the 65th position. This finding indicated that Malaysia had made some progress regarding the participation of females in the labor force, but not as well as in education. The participation of females in the labor force up to the present is less than the average of East Asia and the Pacific region. According to the ILO (2022), the participation of the labor force in the region was 74%, while it was 67% for females and 81% for males. According to the WB (2024), the participation of females in the labor force in Malaysia has reached 52%. This is better than India (33%), Nepal (29%), Fiji (39%), and the Philippines (47%). However, it scored less than Indonesia (53%), New Zealand (68%), Australia (62%), Korea (70%), Vietnam (68%), Singapore (62%), China

(63%), Thailand (59%), and Japan (55%). However, even less than some African and Arab countries, like Rwanda (55%), Uganda (68%), Tanzania (77%), Qatar (64%), and it is hard to reach Madagascar (83%). This implies that at least 48% of women of working age are facing difficulties in accessing jobs. Moreover, there is an inverse relationship between people getting educated and their participation in the labor force. According to Elhadary and Samat (2023), the number of male students enrolled in higher education is 38.94% compared to 61.06% of females. In contrast, 61% of males participated in the labor force compared to 39% of females. Not only that, but even women represent most of the unemployment. Within the eight million people outside the labor force, 4.11 million were women, compared to 3.8 million men. It is unfortunate to know that 40% of the outside population gained secondary education, while approximately 20% obtained a higher education certificate. This led the World Economic Forum survey to classify Malaysia among the low-performing countries in terms of gender gaps. This result challenges the aspiration of Malaysia to be one of the developed nations soon. Since 2006 and up to 2024, Malaysia's overall score on the global and national gender gap has almost stagnated, fluctuating around plus or minus 0.03. This situation led the WEF to declare that on its current trajectory, although overall the gender gap is getting smaller, it will now take (134) years to close the gender gap worldwide or five generations to reach full parity in 215.

5.2. Does working from home close the gender gap?

The experience of working from home, particularly during the COVID-19 pandemic, has overcome some challenges that hinder women from physically participating in the labor market. These challenges include shouldering family matters, problems with transportation, geographical location (rural or urban), and taking care of children and parents. Despite these advantages, thanks to COVID-19, women were negatively impacted by the spread of the pandemic, especially when it came to job losses. Globally, between 2019 and 2020, women's employment declined by 4.2%, representing a drop of 54 million jobs, while men's employment declined by 3%, or 60 million jobs (ILO, 2022). This is because most of the sectors affected were those that employed more women. Moreover, the sudden increase in home/family and caregiving duties is based on the school shutdown. In the case of Malaysia, the female labor force participation rate has decreased from 55.3% in 2020 to 52% in 2024, while the rate of male participation has increased from 80.6% to 81.1% during the same period (WB, 2024).

This paper believed that working from home might address gender disparity, especially in Muslim countries, if well planned and managed. Otherwise, it will create additional burdens for some women, especially those who are married, have kids, and live with their parents. As highlighted by Claudia Goldin, the winner of the Nobel Prize, it becomes more difficult for married women to work from home and to combine work with family. Therefore, it is still debatable whether working from home is beneficial for women or not. Some authors highlighted that working from home will enlarge the wage gap, generate low productivity, create a lack of leadership positions, and reduce promotion among women. Working from home means lower salary and a lack of promotion compared to those in the office. As he argued, being in the office more often and having more face time with your managers and supervisors means that you will be more likely to get a promotion. In addition, Al-Youbi et al. (2020) commented that remote work creates a significant imbalance between employees' professional work and personal lives, which could result in poor performance. On the other hand, Alon et al. (2020) suggested that working remotely from home is an opportunity for women with childcare responsibilities to manage the dual responsibilities of home and work, and might be the best employment option. In the same vein, Alfarran (2023) stated that working from home is good for women, especially those affected by conservative society and gender stereotypes, like in Saudi Arabia. As she argued, in a conservative society, working remotely may be a convenient solution for women, given the predominant socio-cultural conditions regarding gender and working roles. The advantage of working from home has led some authors, like Shuangshuang et al. (2023), to make it mandatory for all women to get aid from digitalization to run the labor markets smoothly.

This section concludes that working from home is an opportunity for women who face socio-economic challenges in the workplace. Therefore, more studies are needed to uncover the positive and negative impact, particularly on issues related to productivity, wage and salary, health (sitting more time on computers), self-development, balance between work duties and family's responsibilities, technological skills, and affordability of the internet (quality). Moreover, not all jobs suit working from home, especially those that attract more women, like health and services.

6. Conclusion

This paper confirms a clear mismatch between the high enrollment of women in higher education and their relatively low participation in the labor force. This challenges the Human Capital Theory, which assumes that higher education automatically leads to increased labor market participation. Although more women than men hold university degrees in Malaysia, men continue to dominate the labor market. The study also questions the commonly held belief that there is a direct, positive relationship between economic development and female labor force participation. The empirical

findings show no strong linear relationship between Malaysia's economic growth and the rate at which women join the labor force. As a result, the widely accepted idea that economic growth leads to higher female labor force participation—or vice versa—needs to be reconsidered.

In today's fast-changing labor markets, the study finds that Signaling Theory better explains women's efforts to enter the workforce. In many Muslim-majority countries where men dominate employment, women are often required to prove their abilities in order to compete for paid work. Therefore, policies focused solely on market-oriented solutions may not effectively reduce the gender gap in the labor market.

The paper argues that education alone is not enough to increase female labor force participation in Malaysia. Women face various socio-economic and political barriers that limit their access to employment. While earning a university degree may empower women and amplify their voices, true progress will require the implementation of fair and practical policies that address these broader challenges. Without such reforms, achieving gender equality in the labor market may take over a century; estimates suggest it could take at least 134 years for developing countries to reach full gender parity.

Remote work might help reduce some of the obstacles faced by women, particularly in conservative societies. However, more research is needed to fully understand the benefits and drawbacks of online work before it is widely promoted as a solution.

A key limitation of this study is its primary focus on the relationship between women's educational attainment and their labor force participation. It does not fully explore the influence of other important factors such as socio-economic and demographic conditions.

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Compliance with ethical standards

Conflict of interest

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References

Aaronson D, Dehejia R, Jordan A, Pop-Eleches C, Samii C, and Schulze K (2021). The effect of fertility on mothers' labor supply over the last two centuries. The Economic Journal, 131(633): 1-32. https://doi.org/10.1093/ej/ueaa100

Akhtar R, Masud MM, and Rana MS (2020). Labor force participation and nature of employment among women in Selangor, Malaysia. Environment and Urbanization ASIA, 11(1): 123-139. https://doi.org/10.1177/0975425320906285

Alfarran AKS (2023). Changing workplace patterns in Saudi Arabia: A gender lens. Journal of Gender Studies, 32(4): 317-329. https://doi.org/10.1080/09589236.2021.2011169

Alias AH, Zamsuri ZH, and Mohd Suradi NR (2021). The profile of female labor force participation in Malaysia based on recursive partitioning analyses. Malaysian Journal of Fundamental and Applied Sciences, 17(3): 226-241. https://doi.org/10.11113/mjfas.v17n3.2041

Alon T, Doepke M, Olmstead-Rumsey J, and Tertilt M (2020). The impact of the coronavirus pandemic on gender equality. COVID Economics Vetted and Real-Time Papers, 4: 62-85.

Al-Youbi AO, Al-Hayani A, Rizwan A, and Choudhry H (2020). Implications of COVID-19 on the labor market of Saudi Arabia: The role of universities for a sustainable workforce. Sustainability, 12(17): 7090. https://doi.org/10.3390/su12177090

Arrow K (1973). Some ordinalist-utilitarian notes on Rawls's theory of justice. Journal of Philosophy, 70(9): 245-263. https://doi.org/10.2307/2025006

Assaad R and Krafft C (2013). The Egypt labor market panel survey: Introducing the 2012 round. IZA Journal of Labor & Development, 2: 8. https://doi.org/10.1186/2193-9020-2-8

Badrolhisam NI and Omar N (2022). Perceived traits for future women academic leaders in Malaysian higher education institutions. International Journal of Academic Research in Economics and Management Sciences, 11(1): 262-284. https://doi.org/10.6007/IJAREMS/v11-i1/11692

Becker G (1993). Human capital. University of Chicago Press, Chicago, USA. https://doi.org/10.7208/chicago/9780226041223.001.0001

Beton Kalmaz D (2023). Asymmetric link between economic well-being and labour market equity in Turkey. International Journal of Development Issues, 22(2): 182-197. https://doi.org/10.1108/IJDI-12-2022-0270

Bhalla R and Meher S (2019). Education, employment and economic growth with special reference to females in Kerala. The Indian Journal of Labour Economics, 62(4): 639-658. https://doi.org/10.1007/s41027-019-00197-2

Bills CA (2018). Female labor force participation and tertiary education: A case study of India and Brazil. PhD Dissertation, Faculty of the Department of International Studies, Fordham University, New York, USA.

Bridges S, Lawson D, and Begum S (2011). Labor market outcomes in Bangladesh: The role of poverty and gender norms. The European Journal of Development Research, 23(3): 459-487. https://doi.org/10.1057/ejdr.2011.14

Bursztyn L, Cappelen AW, Tungodden B, Voena A, and Yanagizawa-Drott DH (2023). How are gender norms perceived? No. w31049, National Bureau of Economic Research, New York, USA. https://doi.org/10.3386/w31049

Christensen P and Osman A (2023). The demand for mobility: Evidence from an experiment with Uber riders. No. w31330, National Bureau of Economic Research, New York, USA. https://doi.org/10.3386/w31330

Doğan B and Akyüz M (2017). Female labor force participation rate and economic growth in the framework of Kuznets curve: evidence from Turkey. Review of Economic and Business Studies, 10(1): 33-54. https://doi.org/10.1515/rebs-2017-0047

Elhadary Y and Abdelatti H (2024). Gender equality at public universities in Saudi Arabia: Achievements and ambitions. Journal of Educational and Social Research, 14(4): 40-59. https://doi.org/10.36941/jesr-2024-0084

Elhadary Y and Ahmed A (2024). Exploring the impact of massification of higher education on the labor force participation and empowerment of Malaysian women. Asian Development Policy Review, 12(3): 243-263. https://doi.org/10.55493/5008.v12i3.5134

Elhadary Y and Samat N (2023). Addressing gender disparity in public universities of Malaysia: Challenges and achievements. Journal of Higher Education Theory and Practice, 23(14): 156-172. https://doi.org/10.33423/jhetp.v23i14.6390

Fatima A and Sultana H (2009). Tracing out the u-shape relationship between female labor force participation rate and economic development for Pakistan. International Journal of Social Economics, 36(1/2): 182-198. https://doi.org/10.1108/03068290910921253

Folke O and Rickne J (2022). Sexual harassment and gender inequality in the labor market. The Quarterly Journal of Economics, 137(4): 2163-2212. https://doi.org/10.1093/qje/qjac018

Goldin C (1994). The u-shaped female labor force function in economic development and economic history. Working Papers 4707, National Bureau of Economic Research, New York, USA. https://doi.org/10.3386/w4707

Halim D, O'Sullivan MB, and Sahay A (2023). Increasing female labor force participation. World Bank Group Gender Thematic Policy Notes Series: Evidence and Practice Note, Washington D.C., USA. https://doi.org/10.1596/39435

Heath R, Bernhardt A, Borker G, Fitzpatrick A, Keats A, McKelway M, Menzel A, Molina T, and Sharma G (2024). Female labor force participation. VoxDevLit, 11(1): 1-43.

Idowu OO and Owoeye T (2019). Female labor force participation in African countries: An empirical analysis. Indian Journal of Human Development, 13(3): 278-293. https://doi.org/10.1177/0973703019895234

ILO (2022). Dissemination and analysis. International Labor Organization, Geneva, Switzerland.

Jayachandran S (2020). Social norms as a barrier to women's employment in developing countries. No. w27449, National Bureau of Economic Research, New York, USA. https://doi.org/10.3386/w27449

Klasen S (2019). What explains uneven female labor force participation levels and trends in developing countries? The World Bank Research Observer, 34(2): 161-197. https://doi.org/10.1093/wbro/lkz005

Lang K and Kropp D (1986). Human capital versus sorting: The effects of compulsory attendance laws. The Quarterly Journal of Economics, 101(3): 609-624. https://doi.org/10.2307/1885699

Lang K and Manove M (2011). Education and labor market discrimination. American Economic Review, 101(4): 1467-1496. https://doi.org/10.1257/aer.101.4.1467

Li OL and Bakar NAA (2021). Determinants of female labor force participation rate: evidence from Malaysia. International Journal of Advances in Engineering and Management, 3(11): 205-217.

Mokhtar AS (2020). Women in senior management in Malaysia: An intersectional analysis. Ph.D. Dissertation, University of the West England, Bristol, UK.

Nam S (1991). Determinants of female labor force participation: A study of Seoul, South Korea, 1970–1980. Sociological Forum, 6(4): 641-659. https://doi.org/10.1007/BF01114405

Nielsson U and Steingrimsdottir H (2018). The signalling value of education across genders. Empirical Economics, 54(4): 1827-1854. https://doi.org/10.1007/s00181-017-1264-z

Ningrum PK, Pansombut T, and Ueranantasun A (2020). Text mining of online job advertisements to identify direct discrimination during job hunting process: A case study in Indonesia. PLOS ONE, 15(6): e0233746.

https://doi.org/10.1371/journal.pone.0233746
PMid:32497044 PMCid:PMC7272088

Olson-Strom S and Rao N (2020). Higher education for women in Asia. In: Sanger CS and Gleason NW (Eds.), Diversity and inclusion in global higher education: lessons from across Asia: 263-282. Springer Nature, Singapore, Singapore. https://doi.org/10.1007/978-981-15-1628-3_10

Pal S and Chaudhuri S (2020). Falling female labor force participation: an analysis of selected countries. Asian Journal of Economics, Finance and Management, 2(1): 154-164.

Pampel FC and Tanaka K (1986). Economic development and female labor force participation: A reconsideration. Social Forces, 64(3): 599-619. https://doi.org/10.2307/2578815

Pericles Rospigliosi A, Greener S, Bourner T, and Sheehan M (2014). Human capital or signalling, unpacking the graduate premium. International Journal of Social Economics, 41(5): 420-432. https://doi.org/10.1108/IJSE-03-2013-0056

Petersen T and Togstad T (2006). Getting the offer: Sex discrimination in hiring. Research in Social Stratification and Mobility, 24(3): 239-257. https://doi.org/10.1016/j.rssm.2006.06.001

Rosen S (1976). A theory of life earnings. Journal of Political Economy, 84(4, Part 2): S45-S67. https://doi.org/10.1086/260532

Salleh SNS and Mansor N (2022). Women and labor force participation in Malaysia. Malaysian Journal of Social Sciences and Humanities (MJSSH), 7(7): e001641. https://doi.org/10.47405/mjssh.v7i7.1641

Saqib N (2016). Women empowerment and economic growth: empirical evidence from Saudi Arabia. Advances in Management and Applied Economics, 6(5): 79-92.

Schultz TW (1960). Capital formation by education. Journal of Political Economy, 68(6): 571-583. https://doi.org/10.1086/258393

Shuangshuang Y, Zhu W, Mughal N, Aparcana SI, and Muda I (2023). The impact of education and digitalization on female labour force participation in BRICS: An advanced panel data analysis. Humanities and Social Sciences Communications, 10(1): 1-9. https://doi.org/10.1057/s41599-023-02020-2

Sinha JN (1965). Dynamics of female participation in economic activity in a developing economy. In the World Population Conference, UN Publication, Belgrade, Serbia.

Spence A (1974). Market signaling: Informational transfer in hiring and related screening processes. Harvard University Press. Cambridge, USA.

Sundari S (2019). Economic development and female labor force participation in Tamil Nadu: A test of the 'u' shape hypothesis. Economic Affairs, 64(4): 695-702. https://doi.org/10.30954/0424-2513.4.2019.3

Taheri E, Güven Lisaniler F, and Payaslioğlu C (2021). Female labor force participation: What prevents sustainable development goals from being realised in Iran? Sustainability, 13(21): 11918. https://doi.org/10.3390/su132111918

Thaddeus KJ, Bih D, Nebong NM, Ngong CA, Mongo EA, Akume AD, and Onwumere JUJ (2022). Female labor force participation rate and economic growth in sub-Saharan Africa: "a liability or an asset." Journal of Business and Socio-Economic Development, 2(1): 34-48. https://doi.org/10.1108/JBSED-09-2021-0118

UN (2022). Achieving gender equality and empower all women and girls. United Nations, New York, USA.

WB (2021). Malaysia country gender note 2021. World Bank, Kuala Lumpur, Malaysia.

WB (2024). School enrollment, tertiary (% gross). World Bank, Washington D.C., USA.

Weimann-Sandig N (2020). Malaysia and its transition process towards more gender equality at the labor market. Malaysian Journal of Social Sciences and Humanities (MJSSH), 5(7): 7-22. https://doi.org/10.47405/mjssh.v5i7.441

Yoong M (2020). Professional discourses, gender and identity in women's media. Springer Nature, Cham, Switzerland. https://doi.org/10.1007/978-3-030-55544-3