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FACTORS ASSOCIATED WITH FEMALE LABOUR FORCE PARTICIPATION BY PROVINCES IN SRI LANKA

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ABSTRACT

The involvement of women in the labour force is a crucial factor in the country's economic development. This study asserted the ongoing economic problem of low female labour force participation. This was a puzzle when compared with the nation's female literacy level, life expectancy, population growth, health facilities and higher education among the females. This research aims to find the factors that affect the female labour force among nine provinces in Sri Lanka. This study used secondary data from the Sri Lanka Labour Force survey conducted by the Department of Census and Statistics (DCS) in 2022. This study applied ten logistic regression models by using Female labour force participation and the dependent variable for Sri Lanka and nine provinces. This result shows a decline in female labour force participation when moving away from the Western province. This study finds the socio-economic factors, fertility, language literacy, disability and training as the key determinants specific to each province. Then it represents the regional disparities in female labour force participation. This research postulated the policies recommended to address the regional development programmes, introduce a capable work schedule and provide the children's infrastructure facilities, especially by focusing on the economic profile of each province.

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1. INTRODUCTION

Female labour participation is a multidimensional issue that combines different social, economic, geographical and cultural contexts. In Sri Lanka, based on the Labour Force Survey conducted by the DCS (2022), it was asserted that the labour force consists of the sum of the employed and unemployed population in the age group of 15 and above. According to Semasinghe (2017), Labour force participation means those who actively participate and are in the working age or willing to participate in labour. The basic factor that determines the future vision of a country is the working population. Recently, Sri Lanka has achieved human development criteria in various sectors. However, Sri Lanka is facing a continuous challenge, which is low female labour force participation. Mubeen et al (2021) as cited in the (World Bank, 2020) report that female labour force participation rates in India, Pakistan, Sri Lanka and the Maldives are declining, while female labour force participation is increasing in South Asian countries such as Bangladesh, Bhutan, Nepal and Afghanistan. In Sri Lanka, based on the DCS (2022), the labour force participation rate (LFPR) is 49.8 per cent, and for males and females 70.5 per cent and 32.1 per cent respectively. This was a long-standing problem not only throughout the world and Asia but also in Sri Lanka. This poses a considerable socio-economic challenge for the future labour markets as well due to the rapid population and ageing leading to a shrinking labour force. Historically, women have been relegated to domestic roles by traditional and societal norms that limited the female labour force participation at that time. This is proved by Chowdhury (2013), who states that women are responsible for childcare and housework. Furthermore, it shows that time constraints and the division of labour hinder women from participating in the labour force. Theoretically, cultural shifts and the education progress of females may increase the female labour force participation with new generations. With that, Mubeen et al. (2021) emphasized the modernisation of the neo-classical approach, which predicts that as societies change, gender discrimination may probably decrease. Nonetheless, gender disparities and the challenges in the labour market have not changed with time though there are some increases in female labour force participation. Alternatively in the 20th century, with urbanisation, there was a significant shift to urban areas from rural areas for jobs. This urbanisation led to the development of the education sector with better access to education facilities. Furthermore, the development of infrastructure facilities especially in transportation, such as roads, railways, ports and trades increased the female labour force participation. Nevertheless, women's rights-focused societies, campaigns and government policies aimed at promoting gender equality. However, there are several barriers to women's participation in Sri Lanka. Especially traditional norms and cultures and also in the individual contexts of the disabilities of people, fertility and responsibilities. These barriers for women may create disparities in the labour market. Disparities in the labour market may hide women's empowerment and their contributions to the economy. However, this was a major issue in Sri Lanka than in other countries in South Asia when compared to the high facilities in the country. Female Labour force participation in Sri Lanka is a puzzle when compared to the education level, health

facilities and high population growth among females (Gunawardhana, 2015). As the population of the country increases day by day, proportionately the female population growth increased at an increasing rate. The total population of Sri Lanka was 21.86 million in January 2023. The population increased by sixty-five thousand (3%) between 2022 and 2023 and among them 51.8 % are females, while 48.2% are males (Kemp, 2023). Not only that, Sri Lankan women have a high life expectancy of 74 years when compared to other South Asian countries, with a 92.6% universal literacy rate (Gunarathne & Perera, 2018). Also, the dependency ratio has an impact on the labour force participation rate especially females, because the dependency ratio creates an economic burden, care, responsibilities and financial constraints and also as Sri Lanka has a somewhat high dependency ratio. The World Bank (2022) points out that the Sri Lankan dependency ratio was 50 per cent in 2012, and it increased to 52 per cent in 2022. This is significantly higher when compared to other Asian countries like the Maldives, Bhutan, India and Bangladesh. Moreover, Gunawardhana (2015) asserted that though Sri Lanka has made developments in the fields of health, education and infrastructure when compared with other developing nations, Sri Lanka has a lower female labour force participation rate. These disparities mainly occur across geographical locations. These gender disparities in the labour market are still a matter of focus for most researchers because it has been a stagnant problem for decades.

Hence, it is important to study this regional dimension, which is essential to formulate strategies to overcome the regional disparities in the labour supply. Furthermore, this study aims to identify the factors associated with labour force participation in different geographical areas. As a result, rather than a common factor that affected female labour force participation, this study uses a varied range of independent variables regarding the individual model to gain an idea of female labour force participation in Sri Lanka. Most researchers limited their attention only to the neoclassical and Human capital theory (Madhusanka 2020; Samarakoon & Mayadunne, 2018; Yakubu 2010). Hence, there is no sufficient evidence in the literature that the efficiency of individual female labour supply concepts had developed by mixing two theories with two disciplines of individual and household model labour supply. Nonetheless, to the best of our knowledge and especially in the Sri Lankan context, no research has been found that has measured the factors on female labour force participation by spatial factors (nine provinces). Gunatilaka and Vithanagama (2021) analysed only the Northern Province in Sri Lanka. Hence, there is no sufficient evidence in the literature on how factors affected female labour force participation based on all nine provinces. Empirically, there is no sufficient evidence in the literature that the other researchers have adequately studied this research problem. Also, a few studies have been able to develop a comprehensive assessment of female labour force participation in Sri Lanka. To avoid regional disparities like urban-rural division, it is crucial to identify the geographical variations. Then, the problem raises the question of why the female labour force participation rate is very low even though the economic and necessary facilities for women have developed over the past two to three decades. Hence, this study aims to find the determinants that affect the female

labour force participation of the nine provinces in Sri Lanka.

2. LITERATURE REVIEW AND HYPOTHESES

The labour force participation rate has connections to a wide range of factors of human existence, especially in less developed nations (Semasinghe, 2017). Low labour force participation of women is still a serious problem, especially in market economies (Komuryakan, 2021). Further, it is important to study the female labour force participation rate due to most scholars emphasising that it is connected with economic growth (Gunarathne & Perera, 2018; Komuryakan, 2021; Mujahid et al., 2013; Niranjala & Hettiarachchi, 2021; Rahman, 2018). In Sri Lanka, the main source of information regarding the labour force is the Labour Force Survey conducted every year by the DCS. Rather than that, several researchers have defined the labour force or adjusted this definition according to relevant occasions. Among them, Niranjala and Hettiarachchi (2021) defined the female labour force as the percentage of women in the nation who are 15 years of age or older women who are named as the female labour force. Also, it consists of both employed and as well as unemployed but economically active and seeking job opportunities.

The concept of labour force participation may involve some theories and there are several of them. These theories include the various perspectives regarding women's engagement in the labour force. When looking back at the chronological arrangement of these theories, it is mainly divided into two parts; the individual model and the household model. The individual model started with the "Neoclassical theory" and then it expanded with the "Human Capital Theory", "Labour Leisure Model", "A standard participation model", and the "Life cycle model of labour supply". Then, during the late 19th and early 20th century, "The Neoclassical theory" came to the fore. The theory of neo-classical labour supply is a functionalist approach to determining the labour supply (Ranawaka, 2019). This neoclassical theory emphasises that women are making decisions regarding labour force participation based on rational decisions such as cost and benefits. It implies that if the wages exceed the opportunity cost, then women are entering the labour market. The ILO (2016) indicated the importance of the standard neoclassical static labour supply model because probably this theory may be the first to explain the labour supply of individuals. Furthermore, the substitution effect can be seen here, and there is a positive relationship between wage and the price of leisure as an increase in the wage will increase the price of leisure, which then reduces the demand for leisure by proving the demand law and increasing the labour supply. While documenting the expected wage as reservation wages, Samarakoon and Mayadunne (2018) indicate that from the neo-classical economics perspective, the labour leisure choice model and the theory of reservation wage explain the labour supply of persons and labour force participation. According to Cullison (1979), the neoclassical theory of aggregate labour supply, module the factors that affect the labour supply and it noted that labour supply varied with wages, work preferences of women, and population. Moreover, work preference and population are named as exogenous factors and it shows that rising unemployment causes the overall labour supply curve to move to the right. The traditional neo-classical theory was based on other theories such as the standard

participation model that was created using the traditional neoclassical labour supply theory. In addition to that, in 1950 and onwards the human capital theory was introduced. The human capital theory explains that investment in education, training, skills and development may enhance productivity and women's participation in the labour force. Then there is a positive and significant impact from investment in human capital to high income and women's labour force participation. According to Yakubu (2010) one of the individual models of the Human Capital Theory (HCT) asserts that women's educational qualifications positively and significantly correlate with their propensity to enter the labour force. After that, with the theoretical foundation of the neoclassical model, the "Labour Leisure model" came to the fore as the "neoclassical model of labour-leisure choice" in the mid-20th century. Economists typically use this model to analyse the labour supply behaviour because this uses neoclassical principles to analyse the decisions of individuals. This model is based on the choices of individuals among labour and leisure. In their study, Samarakoon and Mayadunne (2018) postulated that the labour-leisure choice theory means the main economic factors that influence the labour supply or how people divide their time between work, and that leisure is wage rates and access to other (non-labour) income.

2.1 Factors associated with female labour force participation

The residential sector deals with rural, and urban and this division is a more important factor to the female labour force participation (Adee, 2012). According to Fatima & Sultana (2009), the female participation rate is higher in rural areas than in urban areas. Marital status has a significant effect on the FLFP (Siyama & Samaraweera, 2021). There is a negative relationship between age and female labour force participation with the age bracket of 20-60 years in the formal sector but it significantly affected female labour force participation (Khadim & Akram, 2013). Meanwhile, Tesfaw and Mehare (2023) further asserted that when females' additional years of age are increased by one unit, the probability of females entering the labour force increases by 12.2%, with most scholars documenting that those disabilities of the females negatively affected the female labour force participation (Cebula & Coombs, 2008). Having children or the fertility of females affects the women in the household. An Indian study emphasised that in Gujarat, the main reason for women not to participate in the labour force is the rapid births (Umbreen, 2019). Hence, most emphasise that fertility may affect female labour force participation negatively. However, positive effects on the female labour force from fertility may occur due to the quality childcare facilities with a good family structure. Then this study found that fertility has the highest effect on the female labour force (Taşseven et al., 2016). Having young children hurts female labour force participation (Cebula & Coombs, 2008). Though women enjoy good health after giving birth, they are busy taking care of their children, which creates a barrier to females entering the market (Umbreen, 2019). Female labour force participation may vary with the different ethnicities in different countries. The USA study emphasised that the most dissatisfied result for the female labour force participation was white females (Cullison, 1979) and according to Gitter and Reagan (2022) among Indian women, almost

10 per cent of women participate in the labour market. The human capital theory mentioned that vocational training is an investment, the study of Tesfaw and Mehare (2023) (Mincer, 1962) shows that when females have training then the possibility is more for them to participate in the labour market. Some studies have asserted that language literacy affects female labour force participation (Azid et al., 2010; Khan & Khan, 2009). On language literacy, Gunawardhana (2015) and Mallawarachchi & Peiris (2020) asserted that as English literacy was a significant factor, therefore illiteracy in the English language caused a low level of labour force participation. Also, there is a relationship between these variables and female labour force participation. Therefore:

H1:- There is a relationship between socio-economic factors and female labour force participation.

2.2 Geographical Location

This section refers to the existing practical evidence regarding the effect of geographical variations on female labour force participation. Hence, the specified hypotheses will be tested in compliance with the study's objectives. In this study, one of the specific aims is to find out how female labour force participation may vary separately within the nine provinces when nine independent variables change. So, it is important to study the female labour force participation across the different regions to identify the regional disparities within the country. When comparing this variation of geographical locations on the female labour force participation based on developed and developing countries, Japan was named as a developed country due to its advanced technology and high living standards. The study by Kawabata and Abe (2018) in Tokyo, Japan emphasised that Prefectures, counties and metropolitan areas exhibit significantly different female labour force participation and it shows that the regional variation among females is significantly much wider than among males. Moreover, highly educated women are particularly considerate of their commute times. In addition to that, some developing countries such as India, South Africa and Cameroon, with lower GDP per capita and less advanced infrastructure facilities when compared to the developed countries asserted more geographical variations. An Indian study by Macpherson (1990) as cited in Singh (2022) postulated the importance of considering geographical variations positively when studying the FLFP. However, one South African study by Ntuli (2007) pointed out the negative effect of geographical variations as it consistently discouraged the involvement of females in the labour market. Nevertheless, regarding developing countries, the study by Klasen (2019) shows there are significant regional variations in female participation among South Asian countries and the variations in regional patterns are more confusing. In Sri Lanka, Chowdhury (2013) factorised the regional variation effect of FLFP as an independent variable. Indeed, some studies pointed out that though there are some regional barriers to accessing job opportunities, if there are some childcare facilities in the region, then females have more probability of working in paid jobs. Some developed countries have a positive relationship between female labour force participation and fertility. Pimkina and de La Flor (2020) emphasise that there may be higher childcare facilities in these countries. Furthermore, the Netherlands study by Van Ham and Mulder (2005) identifies that if

some regions have access to quality childcare facilities, then geographical variations may not be an issue for them, and hence women may balance their child work and paid jobs, which in turn will increase the female labour force participation. By following this idea scholars have mentioned promoting childcare facilities as a policy recommendation of their studies (Arunatillake, 2017; Gunarathne & Perera, 2018; Khan & Khan, 2009; Semasinghe, 2017). The geographical variation may be affected by the wage differential and gender segregation among women. Most women are engaged in tea and garment factories. Hence, it creates employment opportunities for those who can access these industries (Handaragama et al., 2013). Women's participation increased mainly due to the establishment of new manufacturing and garment industries, as cited by Madurawala (2009). However, according to Semasinghe (2017), manufacturing industries use less labour because they invest more capital. As such, they mostly prefer to be located in non-urbanised areas to attract low-wage employees and females.

H2:- There is a relationship between these factors associated with female labour force participation and geographical location.

3. MATERIALS AND METHODS

The primary focus of this research is investigating the factors associated with Female Labour Force Participation in Sri Lanka by Spatial Factors. In the context of Ontology, this research is based on an objective reality by implying that there are objective truths that can be verified through the use of scientific methods and mathematical equations. So, this study aligns with positivism with the theoretical framework of this study. Further, this study uses a top-down approach starting with a theory and then applying it to a specific case to conclude. Hence, this is heavily on the deductive approach. This is explanatory research because this study provides more explanations, details in a different situation, and further clarifications of labour force participation of women province-wise. Reality can be measured and there are reliable and valid tools to do this. Therefore, this study used a quantitative approach to conduct this research. This research used the secondary data method from the Labour Force Survey of 2022. It is one of the nationally accepted sources of collecting secondary data. The population for this study is females in the working-age population; that is, all females aged 15 years and above in the country. The economically active populace at present (labour force) is typically recognised as the addition of the "employed" and "unemployed" population in the country. The total sample size for the annual survey results for the 2022 report is based on 25,750 housing units covering all the districts in Sri Lanka. These sampling units use one probability sampling method such as a stage-stratified sampling method (DCS, 2022).

The study used ten binary logit regression models to analyze the factors associated with female labour force participation at national and provincial levels as follows:

$$logit\ (flfp) = Ln\frac{P^1}{(1-p^i)}$$
$$= \beta 0 + \beta 1Ms_i + \beta 2Rs_i + \beta 3Eg_i + \beta 4Ag_i + \beta 5Ll_i + \beta 6Di_i + \beta 7Fe_i + \beta 8Vt_i + \beta 9Ed_i + ut$$

In the above model, FLFP (Female labour force participation) is the dependent variable. β0 and ut represent the constant and error term, respectively. Marital status (Ms), Residential sector (Rs), Ethnic group (Eg), Age (Ag), Language literacy (Ll), Disability (Di), Fertility (Fe), Vocational Training (Vt) and Years of Education (Ed) are the independent variables. Moreover, this research uses a logistic regression model to analyse the female labour force participation by spatial factors in Sri Lanka because the dependent variable of this research is binary. For that, this microdata is analysed using the STATA/MP 13(64-bit) statistical package software removing heteroscedasticity within the variables through the robust command and the Binary Logit Regression analysis is used to identify the influence of the factors that affect the female labour force participation.

4. RESULTS AND DISCUSSION

The low participation of females in the labour market in Sri Lanka has been continuing for a long time in Sri Lanka. According to the Labour Force Survey in 2022, the female labour force is 32.1% in Sri Lanka and the data analysis has been done through several steps as it is for the overall model and the sub-samples.

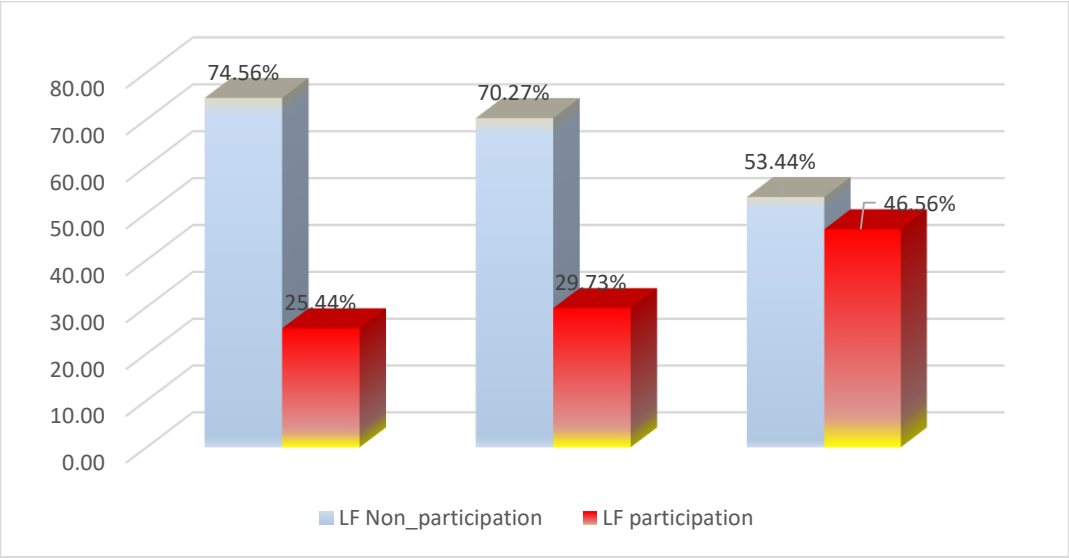

Figure 1: Female labour force participation within residential sectors in 2022
Source: Developed by the researcher using LFS 2022 data

This graph shows the female labour force participation and non-labour force participation within the Urban, Rural and Estate sectors. It reflects the high participation of women in the Estate sector and low participation in the urban sector while the non-participation of women is higher in the urban sector.

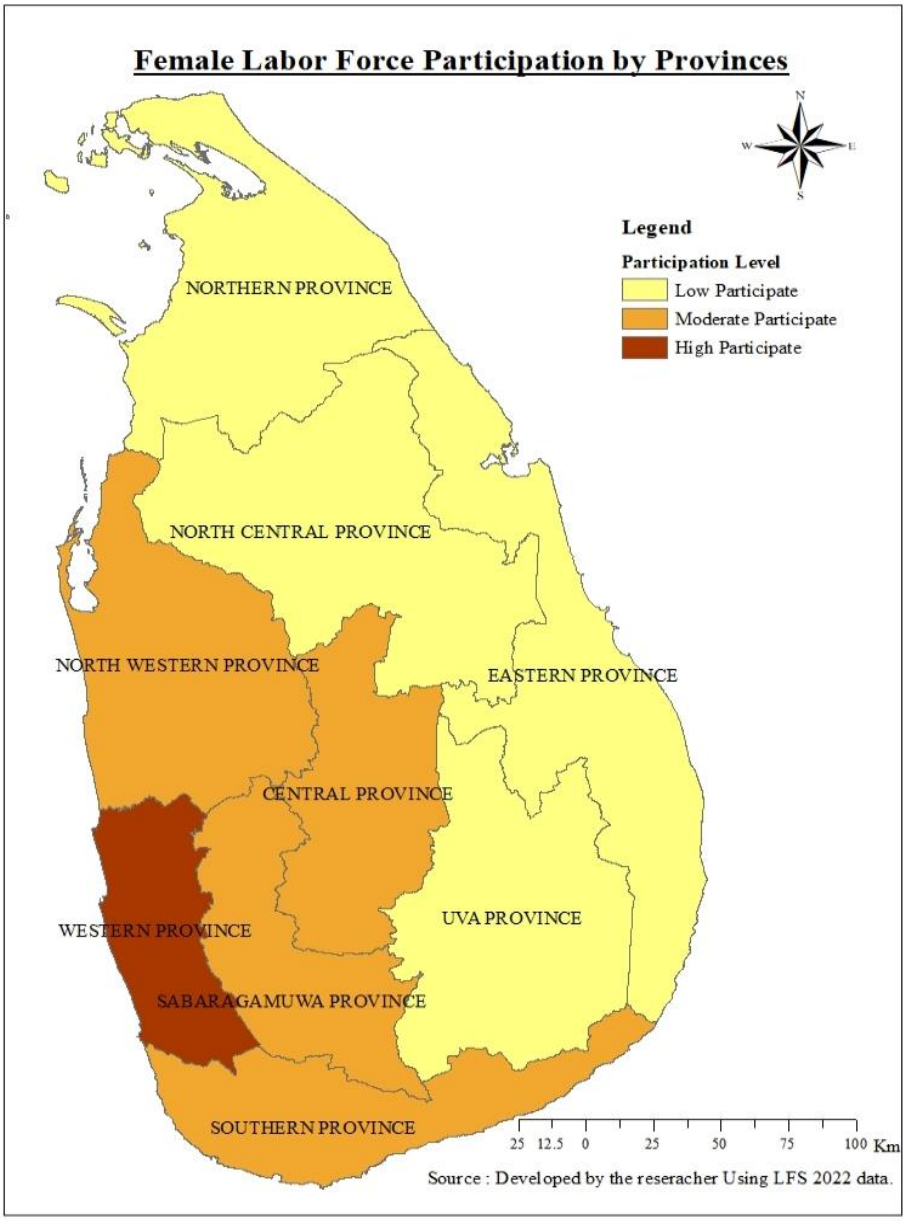

Figure 2. Female labour force participation by provinces in 2022

This figure shows how females participate in the labour market in different provinces in Sri Lanka.

Table 1: Binary Logistic Regression model for the overall model

Total Model				
Number of obs = 31,955 LR chi2 (27) = 6392.26 **Prob > chi2 = 0.0000** Pseudo R2 = 0.1644				
Variable	Logistic coefficient (Odd ratios)	**Probability value - P>|z|**	**Coefficient of marginal effect**	**Std. Err.**
Dependent variable – labour force participation (dummy)				
Explanatory variables				
Socio-economic factors				
Being_ever_married (dummy)	**1.3248**	**0.000**	**.0477**	**.0692**
Being urban (dummy)	**.7770**	**0.000**	**-.0428**	**.0321**
Being_non-Sinhalese (dummy)	**.8025**	**0.002**	**-.0373**	.0565
Age (continuous)	**1.3080**	**0.000**	**.0446**	**.0083**
Age_sqd (continuous)	**0.9970**	**0.000**	**-.0004**	**.0000**
yrs_of education (continuous)	1.0090	0.152	.0015	.0063
Fertility				
being childess6 (dummy)	**.5565**	**0.000**	**-.0995**	**.0286**
Having children 6 to 14 (dummy)	**.8943**	**0.001**	**-.0189**	**.0293**
Having children 15 plus (dummy)	**.6384**	**0.000**	**-.0762**	**.0210**
Having_employed children (dummy)	**4.4149**	**0.000**	**.2522**	**.1762**
Languages literacy (Sinhala (S)/ Tamil(T)/English(E))				

Knowing only Sinhala	**1.2055**	**0.014**	**.0317**	**.0919**
Knowing only Tamil	1.0814	0.350	.0132	.0906
Knowing only English	1.2919	0.598	.0435	.6283
Knowing_ST	1.1153	0.389	.0185	.1414
Knowing SS	1.0433	0.635	.0072	.0933
Knowing ET	**.7663**	**0.025**	**-.0452**	**.0908**
Knowing_STE	1.0655	0.543	.0107	.1112
Disabilities				
Being disabled (dummy)	**.6970**	**0.000**	**-.0613**	**.0312**
Having training				
Having_no training (dummy)	**.3904**	**0.000**	**-.1597**	**.0216**
Spatial factors (provinces)				
Western Province	**.7514**	**0.000**	**-.0485**	**.0401**
Central Province	1.0773	0.190	.0126	.0612
Southern Province	**.8058**	**0.000**	**-.0366**	**.0459**
Eastern Province	**.3775**	**0.000**	**-.1654**	**.0293**
Northern Province	**.6401**	**0.000**	**-.0757**	**.0477**
North-Western Province	.9264	0.203	-.0129	.0556
North-Central Province	**.7318**	**0.000**	**-.05303**	**.0521**
Uva Province	.9856	0.838	-.00245	.0697
_cons	.0068	0.000	-	.0048

Source: Developed by the researcher using LFS 2022 data

Note:

- Proportions were calculated for all dummy variables.
- These results show odd ratios. Hence, if the odd ratio (Or) is greater than 1 it shows a positive relationship. On the other hand, if the odd ratio (Or) is less than 1, it comes with a negative relationship. Further, positive and negative relationships are proved by the Coefficient Of Marginal Effect.

- Reference category (Ref.) for overall models: Being a woman who is never married, Non-urban, Sinhalese, not disabled, not having children less than 6, not having children aged 6 to 14, not having children aged 15 and not having employed children, knowing only Sinhala language, knowing only Tamil language, knowing only English language, knowing Sinhala and Tamil language, knowing English and Sinhala Language, knowing English and Tamil language, knowing Sinhala, Tamil, English Language, being trained and being not disabled.
- Statistically significant at 5%.

Table 2: Binary Logistic regression model for female labour force participation by separate provinces

Name of the Model	**Western Province 1**			**Central Province 2**			**Southern Province 3**		
Variable	Logistic Coe. (Odd Ratio)	Prob. Value	Coe. Of Margin. Effect	Logistic Coe. (Odd Ratio)	Prob.	Coe. Of Margin. Effect	Logistic Coe. (Odd Ratio)	Prob.	Coe. Of Margin. Effect
The overall probability for separate Model	**0.0000**			**0.0000**			**0.0000**		
LR chi2	**1590.64**			**1016.24**			**912.87**		
Dependent Variable - Female labour force participation **Explanatory variables** **Socio-economic factors**									
Being_ever_married (dummy)	1.7877	0.0000	0.0997	1.1533	0.3080	0.0258	1.2566	0.0990	0.0233
Being_urban (dummy)	1.0347	0.5740	0.00059	0.6007	0.0000	-0.0923	0.5101	0.0000	-0.11332
Being_non-Sinhalese (dummy)	0.7339	0.0260	-0.05531	0.7758	0.1630	-0.04660	0.6613	0.0810	-0.06996

Age (continuous)	1.2927	0.0000	0.0441	1.3380	0.0000	0.0527	1.2958	0.0000	0.0436
Age^2 (continuous)	0.9971	0.0000	-0.0005	0.9968	0.0000	-0.0006	0.9972	0.0000	-0.0005
Years_of education (continuous)	0.9933	0.6400	-0.0012	0.9607	0.0140	-0.0073	1.0153	0.3780	0.0026
Fertility									
Being_childless_6 (dummy)	0.6454	0.0000	-0.0751	0.4877	0.0000	-0.1301	0.5123	0.0000	-0.1125
Having_children_6 to 14 (dummy)	0.7163	0.0000	-0.0573	0.7895	0.0100	-0.0428	1.1029	0.2690	0.0165
Having_children_15 plus (dummy)	0.5439	0.0000	-0.1045	0.6973	0.0000	-0.0653	0.7351	0.0010	-0.0518
Having_employed_children (dummy)	4.0771	0.0000	0.2411	3.7926	0.0000	0.2415	4.5223	0.0000	0.2538
Languages literacy (Sinhala (S)/ Tamil(T)/English(E))									
Knowing only Sinhala (dummy)	1.1665	0.3940	0.0264	0.7846	0.2390	-0.0439	1.4029	0.0960	0.0570
Knowing only Tamil (dummy)	1.1035	0.6660	0.0169	0.4904	0.0010	-0.1291	1.0502	0.9200	0.0082
Knowing only English (dummy)	1.0000	NA	0.0000	0.4339	0.4220	-0.1513	0.1161	0.2130	-0.3622

Knowing_ST (dummy)	1.2059	0.5270	0.0321	0.7239	0.2790	-0.0585	0.8965	0.7760	-0.0184
Knowing SS (dummy)	1.0191	0.9250	0.0032	0.5839	0.0240	-0.0975	1.0460	0.8500	0.0076
Knowing ET (dummy)	1.5551	0.1550	0.0758	0.4164	0.0030	-0.1587	1.0000	NA	0.0000
Knowing_STE (dummy)	1.0685	0.7780	0.0114	0.7220	0.2140	-0.0590	1.4908	0.1830	0.0672
Disabilities									
Being disabled (dummy)	0.5296	0.0000	-0.1091	0.4792	0.0000	-0.1333	0.6419	0.0000	-0.0746
Having training									
Having_no training (dummy)	0.4319	0.0000	-0.1440	0.4354	0.0000	-0.1506	0.2733	0.0000	-0.2182
Constant	0.0046	0.0000	-	0.2971	0.4830	-	0.0403	0.1350	-

Name of the Model	**Northern Province 4**			**Eastern Province 5**			**North-Western Province 6**		
Variable	Logit Coe. (Odd Ratio)	Prob. Value	Coe. Of Margin.Effect	Logit Coe. (Odd Ratio)	Prob.	Coe. Of Margin.Effect	Logit Coe. (Odd Ratio)	Prob.	Coe. Of Margin.Effect
Overall Model (probability Model)		**0.0000**			**0.0000**			**0.0000**	

LR chi2	**532.60**			**390.22**			**639.69**		
Dependent Variable - Female labour force participation									
Explanatory variables									
Socio-economic factors									
Being_ever_married (dummy)	1.2642	0.1630	0.0358	1.1015	0.7110	0.0105	0.9706	0.8620	-0.0053
Being urban (dummy)	0.6076	0.0000	-0.0761	0.6221	0.0020	-0.0518	1.0082	0.9710	0.0015
Being_non-Sinhalese (dummy)	1.1095	0.8790	0.0159	0.8184	0.5370	-0.0219	0.7835	0.3000	-0.0437
Age (continuous)	1.2698	0.0000	0.0365	1.3197	0.0000	0.0303	1.2914	0.0000	0.0458
Age_sqd (continuous)	0.9972	0.0000	-0.0004	0.9970	0.0000	-0.0003	0.9971	0.0000	-0.0005
Yrs_of education (continuous)	1.0667	0.0020	0.0099	1.1035	0.0000	0.0107	1.0141	0.4460	0.0025
Fertility									
Having children less than 6 (dummy)	0.5592	0.0000	-0.0888	0.5392	0.0010	-0.0674	0.6376	0.0030	-0.0806
Having children 6to14 (dummy)	1.0253	0.8070	0.0038	0.9245	0.5570	-0.0086	0.9298	0.4640	-0.0130
Having children 15 plus (dummy)	0.4999	0.0000	-0.1059	0.4786	0.0000	-0.0804	0.7185	0.0010	-0.0592
Having_employed children (dummy)	5.2355	0.0000	0.2528	8.1992	0.0000	0.2296	4.9824	0.0000	0.2878
Languages literacy (Sinhala (S)/ Tamil(T)/English(E))									
Knowing only Sinhala(dummy)	3.4745	0.0790	0.1902	1.7543	0.1450	0.0613	1.2776	0.2320	0.0439

Knowing only Tamil (dummy)	1.5171	0.0450	0.0637	1.6777	0.0410	0.0565	1.8595	0.0540	0.1111
Knowing only English(dummy)	1.2053	0.8790	0.0285	1.0000	NA	0.0000	0.4235	0.4820	-0.1540
Knowing_ST (dummy)	1.8425	0.4350	0.0933	0.4328	0.1910	-0.0914	1.1998	0.6130	0.0326
Knowing SS (dummy)	3.7695	0.2640	0.2026	1.7831	0.2560	0.0631	1.3857	0.1940	0.0585
Knowing ET (dummy)	0.9948	0.9840	-0.0008	0.9016	0.7640	-0.0113	1.6337	0.4990	0.0879
Knowing_STE (dummy)	0.6797	0.3540	-0.0590	0.7603	0.5490	-0.0299	1.1556	0.6300	0.0259
Disabilities									
Being disabled (dummy)	1.0819	0.5870	0.0120	0.6269	0.0360	-0.0510	0.9041	0.3890	-0.0181
Having training									
Having_no training (dummy)	0.4691	0.0000	-0.1156	0.1909	0.0000	-0.1807	0.3239	0.0000	-0.2020
Constant	0.0002	0.0010	-	0.0023	0.0010	-	0.0042	0.0090	-

Name of the Model	**North-Central Province 7**			**Uva Province 8**			**Sabaragamuwa Province 9**		
Variable	Logistic Coe. (Odd Ratio)	Prob. Value	Coe. Of Margin.Effect	Logistic Coe. (Odd Ratio)	Prob.	Coe. Of Margin.Effect	Logistic Coe. (Odd Ratio)	Prob.	Coe. Of Margin.Effect
Overall Model (probability. Model)	**0.0000**			**0.0000**			**0.0000**		

LR chi2	**390.78**			**359.90**			**582.15**		
Dependent Variable - Female labour force participation									
Explanatory variables									
Socio-economic factors									
Being_ever_married (dummy)	1.0791	0.7600	0.0124	1.0107	0.9630	0.0019	1.6158	0.0070	0.0880
Being urban (dummy)	1.0253	0.9430	0.0041	0.2876	0.0000	-0.2241	0.5301	0.0050	-0.1164
Being_non-Sinhalese (dummy)	0.4345	0.1000	-0.1355	1.1761	0.5090	0.0292	0.9372	0.7790	-0.0119
Age (continuous)	1.3630	0.0000	0.0504	1.2863	0.0000	0.0453	1.3274	0.0000	0.0519
Age_sqd (continuous)	0.9964	0.0000	-0.0006	0.9973	0.0000	-0.0005	0.9969	0.0000	-0.0006
Yrs_of education (continuous)	1.0640	0.0310	0.0101	1.0108	0.6610	0.0019	0.9733	0.1760	-0.0050
Fertility									
Having children less than 6 (dummy)	0.5420	0.0040	-0.0996	0.4054	0.0000	-0.1624	0.4517	0.0000	-0.1458
Having children 6 to 14 (dummy)	0.9057	0.4770	-0.0161	1.2637	0.0810	0.0421	0.9302	0.4990	-0.0133
Having chi1dren 5 plus (dummy)	0.9163	0.5140	-0.0142	0.7215	0.0120	-0.0587	0.6599	0.0000	-0.0762
Having_employed children (dummy)	4.5641	0.0000	0.2469	3.7144	0.0000	0.2360	4.5209	0.0000	0.2767
Languages literacy (Sinhala (S)/ Tamil(T)/English(E))									

Knowing only Sinhala(dummy)	1.2858	0.3960	0.0409	1.1527	0.5950	0.0256	0.9640	0.8780	-0.0067
Knowing only Tamil (dummy)	2.0049	0.2560	0.1131	1.0584	0.8570	0.0102	1.0981	0.7490	0.0172
Knowing only English(dummy)	1.0000	NA	0.0000	1.0000	NA	0.0000	1.0000	NA	0.0000
Knowing_ST (dummy)	2.8548	0.2120	0.1706	0.7867	0.5500	-0.0432	1.1722	0.6850	0.0291
Knowing SS (dummy)	1.0568	0.8890	0.0090	1.1306	0.7250	0.0221	0.7436	0.2980	-0.0543
Knowing ET (dummy)	0.4907	0.5830	-0.1158	1.5204	0.7120	0.0754	1.1779	0.8140	0.0300
Knowing_STE (dummy)	0.7612	0.5980	-0.0444	0.6144	0.2260	-0.0876	1.1369	0.7120	0.0235
Disabilities									
Being disabled (dummy)	0.8430	0.3140	-0.0278	0.3473	0.0000	-0.1902	0.9519	0.7160	-0.0090
Having training									
Being_not trained (dummy)	0.4222	0.0040	-0.1402	0.4964	0.0120	-0.1260	0.5074	0.0010	-0.1244
Constant	0.0007	0.0080	-	0.0071	0.0150	-	0.0042	0.0000	-

Notes:

- These results show odd ratios. Hence, if the odd ratio (Or) is greater than 1 it shows a positive relationship. On the other hand, if the odd ratio (Or) is less than 1, it comes with a negative relationship. Further, positive and negative relationships are proved by the Coefficient Of Marginal Effect.

- Reference category (Ref.) for all models: Being a woman who is never married, non-urban, Sinhalese, not disabled, not having children less than 6, not having children aged 6 to 14, not having children aged 15 plus, not having employed children, knowing only Sinhala language, knowing only Tamil language, knowing only English language, knowing Sinhala and Tamil language, knowing English and Sinhala Language, knowing English and Tamil Language, knowing Sinhala, Tamil, English Language, having training and being not disabled.
    1. The omitted categories in the Western Province model (Model 1) do: not know TS
    2. The omitted categories in the Southern Province model (Model 3) are: not knowing S
    3. The omitted categories in the Eastern Province model (Model 5) are: not knowing TS
    4. The omitted categories in the North-Western Province (Model 7) are: not knowing TS
    5. The omitted categories in the Southern Province model (Model 8) are: not knowing TS
    6. The omitted categories in the Southern Province model (Model 9) are: not knowing TS
    7. N/A denotes that values are not applicable, may be due to insufficient cases.
    8. Statistically significant at 5%

Source: Developed by the researcher using LFS 2022 data

This result shows the logistic regression model for nine separate provinces. Overall models were significant for all models including national and provincial levels. Though each factor shows a different effect for FLFP, age, age squared and having employed children are the highly significant variables all over the provinces. The most influencing and significant factors of the Western Province can be identified as having employed children, being ever married and age. Further, positive relationship factors with female labour force participation can be identified as being ever married, being urban, age, having employed children and all the language literacy variables, while other factors are negative. So, if we compare these high-impacted variables with other provinces, normally having employed children has a higher impact with a high coefficient for all nine provinces. A low impact can be seen in the Sabaragamuwa Province. The age factor is consistently showing a highly significant impact across all provinces. There is an increase in the contribution of the Western Province to the nominal GDP in 2022 when compared to 2021. Service and industrial sector activities are especially higher in the Western Province recording a share of 49.2 per cent in 2022 (CBSL, 2022). Workers from other provinces come to the Western Province for formal jobs in these sectors, where they have to bear many living expenses, such as rent, food and education. Hence, to cover these expenses females are attracted more to the labour force in the Western Province. The Western Province has a higher participation of women being ever married, with the improvement of the traditional family structure, the cost of living and inflation. In the Western Province, the Colombo district ranked first in the inflation of all food, non-food and other items, while Gampaha and Kalutara were fifth and fourth respectively (Mallawarachchi & Peiris (2020). Also, a high mean household income was recorded in the Western Province, which is Rs. 109,813 (Alwis et al., 2023).

The Central Province has a unique cultural heritage. Then being ever married, age, and having employed children show positive relationships while the other factors show negative relationships with the female labour force participation. Further, though being disabled shows a lower impact in the Central Province when compared to the other provinces it also shows the lowest effect of being disabled after the Uva Province. Age has a higher impact due to the higher education level in the Central Province. A higher impact from having employed children may impact the social norms. Also, being non-Sinhala is not significant due to the demographic composition of the Central Province. Furthermore, the Central Province has a lower support for training facilities. According to Alwis et al. (2023), the Gini coefficient is represented as 0.43. Also, it shows a high mean household monthly income for the Central Province, which is Rs. 65,420 which is the highest value after the Western Province. This is reflected in the regional variation.

The most influencing and significant factors of the Southern Province can be identified as being ever married, age, years of education, having children 6 to 14, having employed children and language literacy variables, while the variables of knowing the English language under the language literacy and being not being trained have the least impact on the female labour force participation in the Southern Province. Also, the positive relationship factors with the female labour force participation can be identified as being ever married, age, years of education, having children 6 to 14 and having employed children, while the other factors are negative. When comparing these variables across the other provinces, the effect of being ever married in the Southern Province is the same as in the Northern Province. Also, the factor of being non-Sinhala is moderately affected in the Southern Province. The reasons for the positive impact of being ever married in the Southern Province can be summarised as married women providing more suitable financial help to the household and also because the Southern Province has recorded one of the highest inflations, with Galle ranked as 7th, Matara ranked as 16th and Hambantota ranked as 5th in inflation among all 25 districts (Mallawarachchi & Peiris (2020). Hence, women need to participate in the labour force to share the family responsibilities. Further, having employed children has a high impact all over the provinces. According to a CBSL (2022) media release, the Southern Province's nominal GDP is 9.1%. When observed sector-wise, the highest contribution is from the agricultural sector, which is 14.6% in 2022, while industry and services are recorded as 6.4% and 9.7% respectively. Activities related to the agricultural sector are high in the Southern Province. Hence, some self-employment opportunities and flexible working hours have been related to the agricultural sector encouraging females into the labour force. Moreover, an ADB of 2022 shows several road improvement projects in the Southern Province. These factors influenced the infrastructure development and healthcare facilities, which in turn significantly influenced the high women labour force participation within the Southern Province.

The Northern Province of Sri Lanka is closer to South India and as a result, has unique characteristics and culture mixed with Indian culture. The most influencing factors in the Northern Province are being ever married,

age, having employed children and some language literacy factors. Age and having employed children were affected similarly with a high impact in all provinces. In addition to this, positive relationships with the female labour force participation are: being ever married, being non-Sinhala, age, having years of education, having children 6 to 14, having employed children, and most of the language literacy variables while other variables show a negative relationship. Furthermore, there is a notably high impact while knowing only the Tamil language in the Northern Province than in the other provinces. Apart from this, being disabled highly affected only the Northern Province more than all other provinces. The Northern Province has limited access to childcare and healthcare facilities. Accordingly, the government has taken immediate measures through the Northern Provincial Council to provide the necessary facilities to the affected children (Massive Development in North to establish Sustainable Peace, Peace News Desk – Media Unit – Office of Governor). Further, the Northern Province shows a positive relationship between disabilities the female labour force participation while all other provinces show a negative relationship because the Northern Province had faced long years of terrorism. However, though people are disabled they may possess various skills and talents which make them competitive in the labour market. Furthermore, the industry composition also affected the female labour force participation in the Northern Province. Though the agricultural sector composition of the GDP is 62%, the industry and services sectors contributed to 4.3% and 3.6% respectively. The agricultural sector has more flexible employment opportunities and also some cultural and social norms affect the labour market. Alwis et al. (2023) show that the Northern Province has a lower mean household income of Rs. 55,390 when compared with other provinces.

When the variables of the Eastern Province are compared with the other provinces, though having employed children shows a high impact in all the provinces, the Eastern Province shows the highest impact from having employed children. Further, a positive correlation with the female labour force participation can be seen in being ever married, age, years of education, having employed children, knowing only Sinhala language, knowing only Tamil language and knowing Sinhala and English languages. The Eastern Province has the highest impact from the years of education than the other provinces. In addition, the lowest effect from being not trained is recorded in this province than in the other provinces. Especially, it can be mentioned that higher education in the Eastern Province may lead to better jobs, thus encouraging females into the labour market. However, according to Alwis et al. (2023), the lowest mean household income is recorded in the Eastern Province when compared to the other provinces, which is Rs. 51,536. Further, in the Eastern Province, the agricultural sector's contribution to the GDP has increased from 8.9% in 2021 to 10.2% in 2022. In contrast to this, the industrial sector and services sector contribution has decreased from 5.1% to 4.2% in 2021 and 5.1% to 4.9% in 2022 respectively (CBSL, 2022). In this province, having employed children has a higher impact because having employed children and financial needs may remove the barriers for mothers to participate in the labour market. Also, in the Eastern Province, the Ampara district ranks 3rd place in inflation of food items

Mallawarachchi & Peiris (2020). Different ethnic groups in the Eastern Province may contribute to the unique skills and perspectives of the female labour force. The lowest coefficient of being not trained in the Eastern Province shows that job opportunities may not require more training to contribute to the labour force.

In the North-Western Province, the positive effect on female labour force participation can be seen in the being urban, age, years of education, having employed children and all the language literacy variables, while other factors show a negative relationship. When these variables are compared, the North-Western Province has the lowest negative effect from being ever married to all the other provinces. According to the CBSL (2022), the North-Western Province has the highest nominal GDP after the Western Province and it has increased from 11.1% in 2021 to 11.2% in 2022. When considered sector-wise, the share of the agricultural sector is 18.3% in 2022 while the industrial and services sectors represent 11.8% and 9.8% respectively. Provincial economic activities, especially rural employment in the agricultural sector and education may impact the female labour force participation. Alwis et al. (2023) show that the highest mean household income is recorded in the North-Western Province after the Western Province. However, being ever married has impacted more in the North-Western Province when compared to the other provinces. Since it shows a lower and negative impact on female labour force participation, it can be observed that when females are getting married it decreases the probability of participation in the labour force. These factors represent the potential variation impact of marital status, regional disparities, social norms and economic situations on the labour force in the North-Western Province.

Meanwhile, the North-Central Province has a historical valuation. Here, the positive effect on the female labour force participation is evident in the categories of having employed children, being ever married, being urban, age, years of education, knowing only Sinhala, knowing only Tamil, knowing both Sinhala and Tamil and knowing both Sinhala and English, while the other factors showed a negative relationship. When comparing these variables with the North-Central Province, being urban has a higher impact than in the Western Province. All nine provinces show a high significant impact on age. However, in the North-Central Province, the effect of age on female labour force participation is higher than in the other provinces. Also, knowing Tamil language, Sinhala and Tamil languages shows the highest impact in the North-Central Province than in all other provinces. The economic reason for these results can be due to the various socio-economic dynamics of the North-Central Province. This shows that being non-urban provides fewer opportunities than being urban for women to enter the labour force in the North-Central Province. This reflected the regional disparities among the different provinces and the availability of job opportunities in the North-Central Province. Moreover, a higher impact of the age factor is reflected, since when age increases, women are more prone to participate in the labour force than in the other provinces. Further, non-Sinhala women show the lowest impact on the labour market. It is affected by social attitudes, family responsibilities and also gender discrimination in the working institution. In the North-Central Province, the mean

household income is Rs. 64,645 (Alwis et al., 2023).

In the Uva Province, positive effects can be seen when being ever married, being non-Sinhala, age, years of education, having children 6 to 14, having employed children, knowing only Sinhala, knowing only Tamil, knowing the Sinhala and English languages, knowing English and Tamil languages, while the other factors show negative effects on the female labour force participation. Having children 6 to 14 and being non-Sinhala have a higher impact in the Uva Province than in the other provinces. When compared with other provinces, being urban shows a lower impact among the provinces, not only within the Uva Province. In the Uva Province, being urban shows statistically significant negative effects on the women's labour force as in rural areas the working hours are more flexible and since more rural women are engaged in agricultural activities. According to the CBSL (2022), the Uva Province's nominal GDP is shown as 4.9% in 2022. When considered sector-wise the Uva Province has a higher agricultural proportion, which is 8.6% in 2022, 4% for the industrial sector and 4.7% for the services sector. Having children 6 to 14 shows a higher positive impact in the Uva Province because women having school-age children are more likely to participate in the labour force to support their educational expenses. Further, the Uva Province shows a higher impact on non-Sinhalese in the labour force. The DCS (2012) shows that after the Sinhala people the highest proportion is recorded as Indian Tamil people, and the Uva Province also shows a lower impact from being disabled people, which is due to the limited employment opportunities in the Uva Province.

The positive impacted variables of the Sabaragamuwa Province are being ever married, age, having employed children, knowing only the Tamil language, knowing Sinhala and Tamil languages, knowing English and Tamil languages, and knowing all three languages, while the other factors imply the negative impact in female labour force participation**.** Years of education show a lower impact and also it has a lower impact among the other provinces. Age and being ever married have a somewhat higher impact when compared with the other provinces. Being urban shows a significant negative impact in the Sabaragamuwa Province. Urban women in the household have lower participation due to their high income because the sector composition of the GDP does not show high differences in the agricultural sector with other sectors like in the other provinces. It shows that the agricultural sector has contributed to the GDP by 8.7%, while the industrial sector and the services sector have contributed 6.7% and 7.1% respectively. In 2022 the nominal GDP of the Sabaragamuwa Province is 7.1% (CBSL, 2022). Also, having children under 6 and having children of 15 plus have a negative significant impact because of the low childcare facilities in the Sabaragamuwa Province and as social norms have impacted this decision. Moreover, being disabled and being not trained have a lower impact on labour force participation. The reason for this is that disabilities and the lack of training are barriers to women's participation in the Sabaragamuwa Province. However, when these two variables are compared with the other provinces, the Sabaragamuwa Province has the highest impact. In addition to this, the lower impact of years of education on labour force participation shows the low education level in the Sabaragamuwa Province.

5. SUMMARY AND CONCLUSION

Over the past decades, low female labour force participation has been a stagnant and yet unsolved problem not only in Sri Lanka but in Asia as well as the world. However, it is a puzzle in Sri Lanka when compared to the available healthcare facilities, high population growth and education levels of the females. Hence, this study aims to explore the factors that have affected the female labour force participation by spatial factors (provinces) in Sri Lanka and as of the best of our knowledge, for the first time this study contributes the spatial variations (province-wise) of the FLFP in Sri Lanka, and further the study has made several contributions by synthesising different theories into a framework and empirically testing it. The study also extended the understanding of their relative worth into different economic and social contexts. The study used the LFS data. The LFS conducted by the DCS in 2022 was used as the main data source for this study. The results of the study revealed the effective socio-economic, fertility, language literacy, disability and training factors in different provinces and the educational levels. One of the specific objectives was to examine the factors that affect the female labour force participation by spatial factors, and then it was analysed within the nine provinces. The most highlighted point in this study is that women's labour force participation is clustered around the capital of the country Colombo and the Western Province. Further, this study asserted that moderate participation was shown around the Western Province, while the female labour force participation decreased when moving away from the Western Province.

The result implicated that being ever married has significantly affected only the Western Province and the Sabaragamuwa Province. However, being ever married was highly significant in the overall model. Apart from the North-Central Province, all other provinces show a positive direction from being ever married to the female labour force participation. Another factor of being urban has a significant effect in the Central Province, Southern Province, Northern Province, Eastern Province, Uva Province and the Sabaragamuwa Province, and all these provinces show negative relationships with female labour force participation. Moreover, under the socio-economic factors, the Western Province shows a significant effect of being non-Sinhala, while all other provinces show insignificant effects. On the other hand, the Northern and Uva Provinces show a positive relationship, while all the other provinces show negative relationships on being a non-Sinhala person in female labour force participation. When age is considered, it shows a positive and significant effect and age squared shows a negative significant effect for all the provinces. Under the fertility factors, if women have children of less than age 6, then it shows a negative significant effect for all the nine provinces, and when it comes to having children of age 6 to 14, only the Western Province and Central Province have a significant negative effect. The same results of a negative significant effect were revealed when having children of 15 plus for all the provinces except for the North-Central Province. Here, notably, the presence of employed children shows contradictory results because it reflects a positive significant effect for all provinces. Sinhala, Tamil and English language literacy have no great significant impact among the provinces, knowing only Tamil language was a

significant factor for the Central, Northern and Eastern Provinces. In addition, knowing both Sinhala and English language and knowing both English and Tamil language significantly affected the female labour force participation in the Central Province. Beyond that, being a disabled woman has a negative significant effect among the Western, Central, Southern, Eastern and Uva Provinces, while the other provinces show an insignificant impact. Being not trained has a negative relationship and it shows the significant impact towards the female labour force participation among all provinces. Hence, the objective of examining the factors associated with female labour force participation by spatial factors has been accomplished by this study. According to the results of the study, it was disclosed that female participation is lower among the provinces under the determinants and it highlights the importance of considering the regional differences.

6. POLICY RECOMMENDATION

- These results revealed the regional disparities among provinces. Hence, the Sri Lanka Provincial Councils in Sri Lanka have to resolve these regional matters. For that, they can work in collaboration with the Central Government's Ministry of Labour and Manpower. It is suggested that new regional programmes to represent women in various provinces be designed as each province has its business foundations such as for agriculture, tourism and handicrafts.
- Especially, being urban shows a significant negative impact on the female labour force participation in most of the provinces. Hence, employment opportunities should be promoted and more attention should be given to self-employment and training programmes, especially targeting the rural areas. The National Enterprises Development Authority (NEDA), Women's Development Centres (WDCs), the Small Enterprises Development Division (SEDD) etc. should provide financial support, and they should promote new flexible, favourable loan facilities from micro-finance institutions like the SANASA.
- The Ministry of Labour can introduce some part-time employment for women and promote the concept of 'working from home'.
- The Ministry of Labour should implement policies such as anti-discrimination laws to ensure equal opportunities for women in the workforce, especially for the non-Sinhala people.
- Further, with fertility, the women's labour force shows a negative effect, especially on women having children less than 6 years of age. So, they should have flexible work hours and paid leave policies in case their children fall ill.

Local Government institutions can assist in communication at the grassroots level for women's participation in the labour force by implementing daycare centres in urban areas. In addition, it is also suggested that large-scale personnel businesses start daycare centres as part of the same businesses.

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9. APPENDIXES

Table 3: Descriptive statistics for female labour force participation by provinces in Sri Lanka

Name of the Model	Western province(1)			Central Province(2)			Southern province (3)		
Variable	**No. of Obs.**	**Mean / Propo**	**Std. Dev.**	**No. of Obs.**	**Mean / Propo**	**Std. Dev.**	**No. of Obs.**	**Mean / Propo**	**Std.Dev.**
		7,552		**4,281**			**4,378**		
Dependent Variable									
Female labour force participation	2,321	.3073	.4614	1,533	.3581	.4795	1,299	.2967	.4568
Explanatory variables									
Socio-economic factors									
Being_ever_married (dummy)	1813	.2401	.4271	927	.2165	.4119	1,009	.2305	.4212
Being urban (dummy)	2,729	.3614	.4804	461	.1076	.3100	456	.1041	.3055
Being_non-Sinhalese (dummy)	1,087	.1439	.3510	1,334	.3116	.4632	244	.0557	.2294
Age (continuous)	7,552	45.74	19.02	4,281	45.69	18.88	4,378	45.89	19.42
Age_sqd (continuous)	7,552	2453.36	1829.06	4,281	2444.34	1803.18	4,378	2483.11	1887.089

Yrs_of education (continuous)	7,552	10.2925	2.9721	4,281	9.2422	3.6220	4,378	9.5507	3.4845
Fertility									
Having children less than 6 (dummy)	699	.0925	.2898	365	.0852	.2793	416	.0950	.2932
Having children 6to14 (dummy)	1,941	.2570	.4370	1,028	.2401	.4272	1,214	.2772	.4477
Having children 15plus (dummy)	5,406	.7158	.4510	2,947	.6883	.4632	3,089	.7055	.4558
Having_employed children (dummy)	1,378	.1825	.3862	603	.1408	.3479	537	.1226	.3281
Languages literacy (Sinhala (S)/ Tamil(T)/English(E)									
Knowing only Sinhala	3,436	.4549	.4980	2,483	.5800	.4936	1,633	.3730	.4837
Knowing only Tamil	7,172	.9497	.2186	3,572	.8343	.3717	4,339	.9910	.0939
Knowing only English	7,537	.9980	.0445	4,277	.9990	.0305	4,376	.9995	.0213
Knowing_S & T	7,436	.9846	.1229	4,158	.9712	.1670	4,314	.9853	.1200
Knowing S & E	5,512	.7298	.4440	3,456	.8073	.3944	3,454	.7889	.4081
Knowing E & T	7,404	.9804	.1386	4,126	.9638	.1868	4,374	.9990	.0302
Knowing_S &T&E	7,186	.9515	.2147	3,997	.9336	.2489	4,132	.9438	.2303
Disabilities									

Being disabled (dummy)	1,090	.1443	.3515	849	.1983	.3988	934	.2133	.4097
Having training									
Being_not trained (dummy)	6,810	.9017	.2976	4,023	.9397	.2380	4,108	.9383	.2405

Name of the Model	**Northern province(4)**			**Eastern province (5)**			**NorthWestern province (6)**		
Variable	**No. of Obs.**	**Mean / Propo**	**Std. Dev.**	**No. of Obs.**	**Mean / Propo**	**Std. Dev.**	**No. of Obs.**	**Mean / Propo**	**Std. Dev.**
	3348			**2666**			**3256**		
Dependent Variable									
Female labour force participation	3,348	.2375	.4256	2,666	.1553	.3622	3,256	.3234	.1929
Explanatory variables									
Socio-economic factors									
Being_ever_married (dummy)	831	.2482	.4320	564	.2115	.4085	628	.1929	.3946
Being urban (dummy)	500	.1493	.3565	672	.2521	.4343	127	.0390	.1936
Being_non-Sinhalese (dummy)	3,267	.9758	.1537	2,159	.8098	.3925	421	.1293	.3356
Age (continuous)	3,348	43.5209	18.7989	2,666	41.5176	17.4603	3,256	45.5417	18.7411

Age_sqd (continuous)	3,348	2247.36	1757.37	2,666	2028.46	1576.04	3,256	2425.17	1783.378
yrs_of education (continuous)	3,348	9.1230	3.1916	2,666	8.4137	3.7446	3,256	9.2008	3.4566
Fertility									
Having children less than 6 (dummy)	440	.1314	.3379	477	.1789	.3833	353	.1084	.3109
Having children 6to14 (dummy)	1,051	.3139	.4642	989	.3709	.4831	915	.2810	.4495
Having children 15plus (dummy)	2,162	.6457	.4784	1,669	.6260	.4839	2,138	.6566	.4749
Having_employed children (dummy)	430	.1284	.3346	174	.0652	.2470	411	.1262	.3321
Languages literacy (Sinhala (S)/ Tamil(T)/English(E))									
Knowing only Sinhala	3,270	.9767	.1508	2,321	.8706	.3357	1,322	.4060	.4911
Knowing only Tamil	793	.2368	.4252	1,162	.4359	.4959	3,035	.9321	.2515
Knowing only English	3,344	.9988	.0345	2,663	.9988	.0335	3,252	.9988	.0350
Knowing_S & T	3,336	.9964	.0598	2,649	.9936	.0796	3,179	.9764	.1520
Knowing S & E	3,342	.9982	.0423	2,589	.9711	.1675	2,718	.8347	.3714
Knowing E & T	3,000	.8960	.3052	2,387	.8953	.3061	3,240	.9950	.0699
Knowing_S &T&E	3,301	.9859	.1176	2,580	.9677	.1767	3,064	.9410	.2356
Disabilities									

Being disabled (dummy)	672	.2007	.4006	362	.1357	.3426	856	.2629	.4403
Having training									
Being_not trained (dummy)	3,238	.9671	.1782	2,600	.9752	.1554	3,080	.9459	.2261

Name of the Model	**North Central province (7)**			**Uva province(8)**			**Sabaragamuwaprovince(9)**		
Variable	**No. of Obs.**	**Mean / Propo**	**Std. Dev.**	**No. of Obs.**	**Mean / Propo**	**Std. Dev.**	**No. of Obs.**	**Mean / Propo**	**Std. Dev.**
	1824			**1755**			**2895**		
Dependent Variable									
Female labour force participation	1,824	.2829	.4502	1,755	.3299	.4703	2,895	.3409	.4741
Explanatory variables									
Socio-economic factors									
Being_ever_married (dummy)	347	.1902	.3926	331	.1886	.3913	579	.2	.4001
Being urban (dummy)	52	.0285	.1665	81	.0462	.2098	135	.0466	.2109
Being_non-Sinhalese (dummy)	188	.1031	.3041	328	.1869	.3899	367	.1268	.3327
Age (continuous)	1,824	44.5690	17.8700	1,755	45.7362	18.6572	2,895	46.6818	19.0709

Age_sqd (continuous)	1,824	2305.56	1651.69	1,755	2439.69	1790.93	2,895	2542.77	1847.957
Yrs_of education (continuous)	1,824	8.8980	3.4697	1,755	8.3458	4.0476	2,895	9.1816	3.5884
Fertility									
Having children less than 6 (dummy)	203	.1112	.3146	188	.1071	.3094	236	.0815	.2737
Having children 6to14 (dummy)	528	.2894	.4536	517	.2945	.4560	747	.2580	.4376
Having children 15plus (dummy)	1,185	.6496	.4772	1,156	.6586	.4743	2,027	.7001	.4583
Having_employed children (dummy)	193	.1058	.3076	179	.1019	.3027	442	.1526	.3597
Languages literacy (Sinhala (S)/ Tamil(T)/English(E))									
Knowing only Sinhala	547	.2998	.4583	761	.4336	.4957	1,058	.3654	.4816
Knowing only Tamil	1,703	.9336	.2489	1,598	.9105	.2854	2,745	.9481	.2216
Knowing only English	1,824	1	0	1,754	.9994	.0238	2,894	.9996	0186
Knowing_S & T	1,796	.9846	.1229	1,701	.9692	.1727	2,834	.9789	.1436
Knowing S & E	1,669	.9150	.2789	1,569	.8940	.3079	2,447	.8452	.3617
Knowing E & T	1,820	.9978	.0467	1,747	.9954	.0674	2,882	.9955	.0668
Knowing_S &T&E	1,778	.9748	.1568	1,677	.9555	.2061	2,776	.9588	.1985
Disabilities									

Being disabled (dummy)	458	.2511	.4338	342	.1949	.3962	659	.2276	.4194
Having training								
Being_not trained (dummy)	1,758	.9638	.1867	1,685	.9601	.1957	2,773	.9578	.2009

Table 4: Variable Description

Dependent variable	Y	Female labour force participation	Dummy	1= if the women participate in the labour force 0= if the woman does not participate in the labour force.
Independents Variables				
Socio-economic factors	X1	Marital status	Dummy	1=ever married 0=never married
	X2	Residential sector	Dummy	1=urban 0=non_urban
	X3	Ethnic group	Dummy	1=non_Sinhales 0=Sinhalese
	X3	Age	Continuous	
	X4	Age squared	Continuous	
	X5	Years of education	Continuous	

Fertility	X6	Having children less than 5	Dummy	1= having children less than 6 0=not having children less than 6
	X7	Having children 6 to 14	Dummy	1= having children 6to14 0= not having children 6to14
	X8	Having children 15plus	Dummy	1=having children 15plus 0= not having children 15plus
	X9	Having employed children	Dummy	1= having employed children 0=not having employed children
Languages literacy (Sinhala/ Tamil/English)	X10	Not knowing_TE (know only Sinhala)	Dummy	1= Not knowing Tamil and English languages 0= Know only Sinhala language
	X11	Not knowing_ES (know only Tamil)	Dummy	1= Not knowing English and Sinhala languages 0 = Knowing only the Tamil language
	X12	Not_knowing_TS **(**know only English)	Dummy	1= Not knowing Tamil and Sinhala languages 0 = Knowing only English language
	X13	Not_knowing_E (know Sinhala and Tamil)	Dummy	1= Not knowing the English language 0 = Knowing Sinhala and Tamil languages
	X14	Not_knowing_T (know English and Sinhala)	Dummy	1= Not knowing Tamil language 0 = Knowing English and Sinhala languages

	X15	Not_knowing_S (know English and Tamil)	Dummy	1= Not knowing Sinhala language 0 = Knowing English and Tamil languages
	X16	Not_knowing_STE	Dummy	1= Not knowing three languages 0 = knowing three languages
Disabilities	X17	Being disabled	Dummy	1= with disabilities 0= No disabilities
Training	X18	Being_not trained	Dummy	1=not received a training 0=received a training

Table 05: Significant, insignificant ratios

Variable	Objective 1 (by spatial factors)								
	WP	CP	SP	NP	EP	NWP	NCP	UVA	SAB
Socio-economic factors									
Being_evermarried (dummy)	**S +**	I +	I +	I +	I +	I -	I +	I +	**S +**
Being urban (dummy)	I +	**S -**	**S -**	**S -**	**S -**	I +	I +	**S -**	**S -**
Being_non-Sinhalese (dummy)	**S -**	I -	I -	I +	I -	I -	I -	I +	I -
Age (continuous)	**S +**	**S +**	**S +**	**S +**	**S +**	**S +**	**S +**	**S +**	**S +**
Age_sqd (continuous)	**S -**	**S -**	**S -**	**S -**	**S -**	**S -**	**S -**	**S -**	**S -**

yrs_of education (continuous)	I -	**S -**	I +	**S +**	**S +**	I +	**S +**	I +	I -
Fertility									
Havingchiless6 (dummy)	**S -**	**S -**	**S -**	**S -**	**S -**	**S -**	**S -**	**S -**	**S -**
Havingchi6to14(dummy)	**S -**	**S -**	I +	I +	I -	I -	I -	I +	I -
Havingchi15plus (dummy)	**S -**	**S -**	**S -**	**S -**	**S -**	**S -**	I -	**S -**	**S -**
Having_emplydchildren(dummy)	**S +**	**S +**	**S +**	**S +**	**S +**	**S +**	**S +**	**S +**	**S +**
Languages literacy (Sinhala (S)/ Tamil(T)/English(E))									
Know only Sinhala	I +	I -	I -	I +	I +	I +	I +	I +	I -
Know only Tamil	I +	**S -**	I -	**S +**	**S +**	I +	I +	I +	I +
Know only English	NA	I -	I -	I +	NA	I +	NA	NA	NA
Know_S & T	I +	I -	I -	I +	I -	I +	I +	I -	I +
Know S & E	I +	**S -**	I -	I +	I +	I +	I +	I +	I -
Know E & T	I +	**S -**	NA	I -	I -	I +	I -	I +	I +
Know_S &T&E	I +	I -	I -	I -	I -	I +	I -	I -	I +
Disabilities									
Being disabled (dummy)	**S -**	**S -**	**S -**	I +	**S -**	I -	I -	**S -**	I -
Having training									
Being_not trained (dummy)	**S -**	**S -**	**S -**	**S -**	**S -**	**S -**	**S -**	**S -**	**S -**