

The Determinants of Unemployment among the Educated Youth in Sri Lanka

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ABSTRACT

As unemployment among the educated youth has been a common problem over the past years in Sri Lanka, this study was initiated to determine the factors affecting the educated unemployed youth (EUY). Data from the Annual Labor Force Survey in 2016 conducted by the Department of Census and Statistics (DCS) was used for this study. This analysis is based on 4002 individuals whose age category of (15-24) and qualified with the G. C. E. (O/L) and G. C. E. (A/L) qualifications. For the analysis, seven variables used were gender, race, religion, marital status, education attainment, literacy in English and the residential sector. When each variable was considered separately, it was found that gender, religion, education attainment, literacy level in English and residential sector have significant impact on EUY. The educated female unemployed youth is significantly higher than that of males. The highest percentage of EUY was found among Buddhists while the lowest percentage was found among Muslims. The rate of EUY having G. C. E (A/L) qualification is significantly less than that of G. C. E. (O/L) qualification. Of the residential sector, the highest unemployed rate (78%) was found in the estate sector. When all the seven variables were considered simultaneously using Binary logistic model, only gender, religion, marital status, education attainment, and residential sector were found significant on EUY. The overall correct classification rate of the Binary Logistic model is 76.2%. When only two way interactions were considered, the model was found to be significant based on Hosmer and Lemeshow statistic ($p=0.460$) and the overall correct classification was improved to 77.1%. The significant interaction was found between gender and education attainment, religion, marital status and English literacy. The percentage of married male EUY is significantly lower than that of unmarried male, but the percentage of EUY is almost same for females irrespective of marital status. The lowest percentage of EUY was noted for males having G. C. E. (A/L). The percentage of male EUY who are unable to read and write is almost the same than that of males who are able to read and write. Percentage of female EUY is much higher among those unable to read and write than that of able to read and write. The inferences derived in this study can effectively be utilized to reduce the EUY in Sri Lanka.

KEYWORDS: Educated youth, Labour force, Logistic regression, Unemployment

Introduction

In the global context, the problem of unemployment has been a deeply rooted problem. This is due to various factors such as discrimination and inequalities based on social class

and status, ethnicity, gender etc (UNDP, 2015). Women are most likely to expose to the issue of gender inequality, which reduces their active participation in labour force. It has been estimated that all the Asian countries have incurred a loss of (42 - 47) USD billion per year with the restrictions on women's engagement in employment opportunities (UNESCAP, 2016).

Sri Lanka is considered to be a Lower Middle-Income country with a GDP per capita of USD 3,835 in 2016 with an entire population of 21.2 million people (Central Bank Report, 2017). Further, the country has been ranked 73rd out of 187 countries with regard to the Human Development Index (HDI) in 2013 with an HDI of 0.750 and an inequality-adjusted HDI of 0.643. In the Gender Inequality Index (GII), Sri Lanka was placed at 75th position with a GII of 0.383 (UNDP, 2014).

At the end of the 30 years of civil war in 2009, Sri Lankan economy has been grown with an average of 6.2% over the period from 2010 to 2016 and the services sector has contributed for 60% of the GDP in 2016 (Central Bank Report, 2017). Over the past three decades, youth unemployment has been recognized as a serious problem in Sri Lanka, which has negatively influenced on the overall productivity and the economic development of the country (Central Bank Report, 2017).

According to the Department of Census and Statistics, unemployment has been defined as those people who are available and or looking for work, and who did not work and have tried out to find a job within the last four weeks and waiting to accept a job within next two weeks. Sri Lankans have been struggling with the problem of unemployment since 1960s. The problem of increasing the unemployment rates have been further confirmed by the following labour force statistics obtained from the Department of Census and Statistics as shown in Table 1.

Table 1: Unemployment Rates in Sri Lanka (2011-2016)

Year	2011	2012	2013	2014	2015	2016
Males	2.7	2.8	3.2	3.1	3.0	2.9
Females	7.1	6.3	6.6	6.5	7.6	7.0
Total	4.2	4.0	4.4	4.3	4.7	4.4

Source: Department of Census and Statistics (2011- 2016)

According to Table 1, the percentages of female unemployment rates are comparatively higher with respect to the males throughout the period (2011-2016) Further, it is confirmed with the youth unemployment rates in the below Table 2.

Table 2: Youth Unemployment Rates in Sri Lanka (2011-2016)

Year	2011	2012	2013	2014	2015	2016
Males	12.8	14.0	15.6	16.1	16.6	17.1
Females	25.0	23.5	23.5	27.5	27.4	29.2
Total	17.2	17.2	19.2	20.3	20.8	21.6

Source: Department of Census and Statistics (2011- 2016)

As indicated in the above Table 2, among the youth population, unemployment rates of males have increased from 12.8% (in 2011) to 17.1% (in 2016), while the female unemployment rates have also increased from 25% (in 2011) to 29.2% (in 2016). Thus, it is clear that female unemployment rates are higher than that of males in all the years.

The results in Table 3 indicate the educational qualifications obtained by the Sri Lankan youth during the period of 2011 to 2016. These percentages were computed with respect to the total number of candidates sat for the examination.

Table 3: Percentage of Candidates Who Passed G.C.E. (O/L) and G.C.E. (A/L) Examinations (2011-2016)

Year	2011	2012	2013	2014	2015	2016
Passed G.C.E. O/L Examination	60.8	64.74	66.67	69.02	69.33	69.94
Passed G.C.E. A/L Examination		63.15	58.56	61.25	62.35	63.36

Source: Department of Examinations (2011- 2016)

These results very clearly indicate that more than 60% were successful in these examinations. Although the majority of the Sri Lankan youth is educated, they do not have enough employment opportunities in the job market and this has been further confirmed by the following labour force statistics obtained from the Department of Census and Statistics in 2016 (Table 4).

Table 4: Youth Unemployment Rates with Respect to Their Level of Education (2011-2016)

Year	2011	2012	2013	2014	2015	2016
G.C.E. O/L	18.3	20.5	21.9	22.8	23.9	22.4
G.C.E. A/L and above	33.9	30.6	33.5	31.3	34.0	32.5

Source: Department of Census and Statistics (2011- 2016)

According to the Table 4, youth unemployment rates are higher among the educated group with G. C. E. A/L and above educational qualifications than those who obtained the G. C. E. O/L qualification. The Table 5 indicates the gender composition of the youth NEET (Rate of youth not in employment, education, and training) Rate during the period of 2011 to 2016.

Table 5: NEET Rate as a Percentage to Total Youth by Gender (2011 - 2016)

Year	2011	2012	2013	2014	2015	2016
Males	13.0	12.7	17.0	17.6	16.3	17.0
Females	33.4	34.7	35.5	37.4	34.6	34.5

Source: Department of Census and Statistics (2011- 2016)

Accordingly, the percentage of the females who are not in employment, education, or training is comparatively higher than that of males over the period from 2011 to 2016.

Results in Table 6 indicate that female NEET rate is higher from that of male for both the education groups. The lowest NEET rate is reported for the group with G. C. E. (O/L) level of education for both males and females.

Table 6: NEET Rate as a Percentage to Total Youth by Educational Qualifications (2016)

Educational Qualifications	Males	Females
G.C.E. O/L	13.2	26.7
G.C.E. A/L and above	22.8	34.7

Source: Department of Census and Statistics (2016)

All the above results highlighted that although the majority of the Sri Lankan youth is educated, they do not get enough opportunities in the labour market. In order to do an in depth study on this issue, the research scope has been limited by only selecting the unemployed youth with G. C. E. O/L and G. C. E. A/L qualifications and therefore, this research study focuses on the determinants of unemployment among the educated youth with G. C. E. O/L and G. C. E. A/L qualifications in Sri Lanka.

Literature Review

In the Sri Lankan labour force, the participation of females are less in comparison to males. As stated in the World Bank report in 2017, less representation of females in the labour force was mainly due to socio cultural factors, mismatching skills and gender discrimination practices. These factors were elaborated further in the following sections.

Firstly the household roles and responsibilities of women especially when they get married at young ages, they are less likely to engage in the labour force. According to 2015 statistics, marriage persons indicated a lower percentage (4.4%) in the odds of Female Labour Force Participation (FLFP), while men's participation was comparatively high (11%). In the early stages before 2010, married women with small children showed a less chance of becoming a paid employee and their earnings were less with compared to the men (World Bank, 2017).

Based on the study conducted using a sample size of 150 by Gunatilaka (2013), due to certain cultural beliefs and norms, females are supposed to engage in in-house activities. This may be a reason for gender gap in LFP by women.

This study claimed that 70% of the married women in Sri Lanka are having at least one child under the age of five and are less likely to engage in work rather than spending their time at homes. This rate is comparatively higher (75%) with women in the urban areas than in the rural areas (71%). The study also revealed that the married females who are the heads of households have certain cultural constraints such as status-related perceptions, attitudes regarding their roles as married women and the gender division of household and care labour within the family unit. However, the problem is, with all constraints they are encouraged to seek for employment, although there were some restrictions imposed by the private sector on the nature and type of work that women were able to take up (Gunatilaka, 2013).

A study conducted based on 200 households who are having at least one pre-school child in urban areas, by Gunathilaka (2010) suggested that non market work of women is not depending on their husband's income, but rather on the proportion of household activities and child care of their adults in the household. If these women can share their housework and child caring services with others, they are most likely to engage in the labour force. There are several factors influencing on the decision of getting formal childcare such as the age of their children, household income, cost of the day care centers, quality of childcare etc. Therefore, it is not simply the availability of those service providers but the quality and the affordability really affects the participation of the females in the labour force.

In the global context, Psacharopoulos and Tzannatos (1989) found that factors such as age, fertility, and religion affect the Labour Force Participation Rate (LFPR) irrespective of the country that is considered. Additionally, Uwakwe (2004) stated that in Nigerian family responsibilities, pregnancy, and physical factors such as nutrition, water, and health services are significantly influential factors on LFPR. In Turkey, State and Planning Organization and the World Bank (2010) found that the FLFP is due to both socioeconomic and cultural factors such as household responsibilities, childcare/eldercare, urbanization, and marital status. According to Faridi et al. (2009), factors like close relatives' educational status, household assets, spouse participation in economic activities, number of children, age of children and husband salary influence the female's decision on whether to participate or not participate in the labor market.

Khadim and Akram (2013) broadly identified three categories of factors that directly influences on the labour force participation in economic activity such as individual and demographic factors as age, education, marital status, socio economic condition factors as per capita income of the household, number of dependents, household type, geographic location factors as whether in urban and rural residences. According to the past trends, the labour force participation of women within the age group of 15-64 over the past two decades have declined from 57% to 55% worldwide. Participation of women in the Middle East and North African countries are lesser than 25%. As estimated by Gallup, within the South Asian region men are having twice of the opportunity than women to engage in full time jobs (World Bank, 2017).

Developing and middle income countries like Mexico, Columbia, Argentina, Brazil, states of India use subsidies to or public provision of child care and they are willing to bear the cost of women when they are involved in economic activities in their households. Further, several studies have found that subsidized childcare and free kindergarten facilities, combined with the transformation of public kindergarten from part-time to full-time, are having a significant influence on the labour force participation decision of mothers with preschool children (Baker, Glyn, & Howell, 2005).

Mismatching skills with respect to the availability of jobs is another reason for the increase in unemployment. Qualitative studies revealed that majority of the Sri Lankan women are preferred to continue their higher studies in the subject areas like humanities and arts but in the job market, there are more demand and job opportunities

available for the people who continue their studies in the subject areas like Information Technology and Management (World Bank, 2017).

Although, the technical education and vocational training are considered important in improving the employability of job seekers, Gunatilaka (2008) found that most of these programs are not being able to provide the expected results. One reason she claimed is that these training sessions are conducted based on the Western province, where the unemployment rate is considerably less. Other reasons are: (i) these training programs are not updated with the expected level of standards (ii) inadequate teachers/resource personnel and teaching aids and insufficient practical exposure.

Another important fact is that although most of these training programs are designed for those people who have completed their G. C. E. O/L examination, a considerable amount of participants was from those who are qualified with G. C. E. A/L examination. This confirms that their formal schooling had not prepared their students for the job market. That is one of the main reason for the existence of mismatching skills with respect to the availability in jobs (Gunatilaka, 2008).

Gender may be discriminated based on the nature of the job. Especially females are given less priority in the jobs related to the field of construction and IT based on its nature. At times in the hiring and recruitment process, less priority is giving for those who do not have contacts with the existing employees at the work place (World Bank, 2017).

A study conducted by Gunatilaka (2008) had shown that the majority of the Sri Lankan employed persons are engaged in the informal work arrangements and among them only about 6% are having permanent engagements. In comparison to females, males comprises a larger portion of the employed in the informal economy. The share of informal work is highest for both males and females in the age category of 15-19 age group. Nevertheless, she claimed that in order to reduce the unemployment, informal job creation could make a direct impact by creating more employment opportunities than in the formal job creation.

Similarly, in the global context, due to certain gender specific constraints in comparison to male farmers, female farmers are less active in commercial farming and more likely to have lower output per unit of land. In the area of Central Highlands of Ethiopia, their output value of per hectare of the female headed households have been estimated 35% lesser in comparison to the male headed households According to a research findings of ILO, women who are in paid work earn less than 10% - 30% on average with compared to men in 83 countries. These gaps are more in Middle East, North African and in OECD countries (ILO, 2017).

Methodology

For this study, data were obtained from Sri Lanka Annual Labour Force Survey in 2016 conducted by the Department of Census and Statistics of Sri Lanka. The survey has been carried out from January to December in 2016, using a Two Stage Stratified sampling and selected a sample of 25,750 housing units, which includes 85,082 individuals.

Here, the census blocks prepared for the Census of Population and Housing in 2012 have been selected as the primary sampling units and the secondary sampling units are the housing units selected from the 2575 primary sampling units. By using the method of systematic random sampling, from each of the selected primary sampling unit, 10 housing units (SSU) are selected for the survey. Out of the entire population, 85,082 of individuals were selected for the Annual Labour Force Survey in 2016 and this analysis is carried out based on 4,002 individuals those who are among the youth within the age category of (15-24) and qualified with the G. C. E. O/L and G. C. E. A/L academic qualifications (Table 7).

Table 7: List of Variables Used for the Analysis

Variables			Code
Gender	X1	Male	1
		Female	2
Race	X2	Sinhala	1
		Tamil	2
		Malay	3
		Other	9
Religion	X3	Buddhist	1
		Hindu	2
		Muslim	3
		Other	9
Marital Status	X4	Single	1
		Married	2
		Other	3
Education Attainment	X5	Passed G. C. E. O/L	1
		Passed G. C. E. A/L	2
Literacy in English	X6	Ability to read and write	1
		Unable to read and write	2
Residential Sector	X7	Urban	1
		Rural	2
		Estate	3
Labour Force Participation	Y	If educated youth is not in the Labour Force (Unemployed)	1
		If educated youth is in the Labour Force (Employed)	0

Statistical Techniques Used

In typical two factors (A & B), having two levels can be illustrated as shown in Table 8.

Hypotheses

H₀: Factor A is independent of factor B or there is no significant association between the two factors A and B.

H₁: There is a significant association between the two variables.

In order to test the above hypothesis based on 2-way frequency table, Pearson Chi Square Test statistic has been used as in equation [1].

Table 8: Two Way Frequency Table

A	B		Total
	B ₁	B ₂	
A ₁	f ₁₁	f ₁₂	f _{1.}
A ₂	f ₂₁	f ₂₂	f _{2.}
Total	f _{.1}	f _{.2}	f _{..}

Note: {f_{ij}} = Observed frequency of the row category = i and column category = j

$$Pearson's\ Chi-Square\ Test\ (exact) = \chi^2 = \sum \frac{(Observed-Expected)^2}{Observed} \quad [1]$$

Test statistic is distributed $\chi^2 (r-1) (c-1)$ where *r* and *c* are the number of rows and columns.

Binary logistic regression is used to develop a model using the most significant factors identified. There are four main methods that can be used to select the variables for the model such as Forward Selection (LR), Forward Selection (Wald), Backward Elimination (LR) and Backward Elimination (Wald) (Peiris, 2018).

Assume X_{1i}, X_{2i}... X_{ki} are the explanatory variables for the *i*th individual. When the response variable is dichotomous, binary logistic model gives the relationship between the response and explanatory variables as follows.

$$Log \left(\frac{p_i}{1-p_i} \right) = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki} \quad [2]$$

Where *i* = 1, 2...n X_{0i} = 1 for all *i* = 1, 2...n

In order to test the significance of the logistic regression model, following test has been used.

Hosmer and Lemeshow Test

The test statistic H is given by,

$$H = \sum_{g=1}^n \frac{(O_g - E_g)^2}{N_g p_g (1 - p_g)} \quad [3]$$

O_g : Number of observed cases in gth group
 E_g : Number of expected cases gth group under the fitted model
 g : Number of groups

Hypotheses

H₀: Model is significant vs H₁: Model is not significant

Under H₀, the test statistic is asymptotically follows Chi-square g-2 *df* (Peiris, 2018).

Results and Discussion

By using the 2-Way frequency table, the influence of each selected explanatory variable on EUY has been tested.

Influence of Gender on EUY

As the chi square test statistic (77.075) is highly significant (p=0.000), it can be concluded that there is a significant influence of gender on EUY. Among the educated female youth, 81.0% of females are not in the labour force (unemployed) and among the educated male youth, 68.9% of males are not in the labour force (Table 9). Nevertheless, as chi square is significant, it can be concluded that the percentage of educated female unemployed youth is significantly higher than the percentage of educated male unemployed youth in Sri Lanka.

Table 9: Influence of Gender on EUY

		Labour Force		Total	
		Yes	No		
Gender	Male	Count	515	1143	1658
		% within Gender	31.1%	68.9%	100.0%
	Female	Count	446	1898	2344
		% within Gender	19.0%	81.0%	100.0%

Chi Square test statistic – $\chi^2_{(1)} = 77.075$ (p=0.000)

Influence of Race on EUY

As the results of the Chi Square statistic (7.331) is not significant (p>0.05), it can be concluded that there is no significant influence of race on EUY (Table 10). Thus, it can be concluded that the percentage of educated unemployed youth is significantly different among races. The lowest percentage (74.8%) can be seen among Sinhalese while the highest percentage (81.8%) is among different races other than Sinhala, Tamil, or Malay.

Table 10: Influence of Race on EUY

		Labour Force		Total	
		Yes	No		
Race	Sinhala	Count	709	2105	2814
		% within Race	25.2%	74.8%	100.0%
	Tamil	Count	156	582	738
		% within Race	21.1%	78.9%	100.0%
	Malay	Count	94	345	439
		% within Race	21.4%	78.6%	100.0%
	Other	Count	2	9	11
		% within Race	18.2%	81.8%	100.0%

Chi Square test statistic - $\chi^2_{(2)} = 7.331$ ($p=0.062$)

Influence of Religion on EUY

The result of the Chi Square statistics (26.468, $p=0.000$) confirms that there is a significant influence of religion on EUY. Thus, it can be concluded that the percentage of educated unemployed youth is significantly different among religions. The corresponding percentages among Buddhists, Hindus, Malays, and others are 75.5%, 81.5%, 78.8%, and 67.2% respectively (Table 11).

Table 11: Influence of Religion on EUY

		Labour Force		Total	
		Yes	No		
Religion	Buddhist	Count	649	2000	2649
		% within Religion	24.5%	75.5%	100.0%
	Hindu	Count	105	463	568
		% within Religion	18.5%	81.5%	100.0%
	Muslim	Count	92	342	434
		% within Religion	21.2%	78.8%	100.0%
	Other	Count	115	236	351
		% within Religion	32.8%	67.2%	100.0%

Chi Square test statistic - $\chi^2_{(3)} = 26.468$ ($p=0.000$)

Influence of Marital status on EUY

The results of the chi square statistics (11.673, $p=0.441$) confirms that there is no significant influence of the marital status on EUY. Among the educated youth of singles, 76.3% of the majority are not in the labour force and among the married educated youth, 73.9% are not in the labour force. As chi square is not significant, it can be concluded that marital status is not significantly influence on the educated youth unemployment irrespective of the gender (Table 12).

Table 12: Influence of Marital status on EUY

			Labour Force		Total
			Yes	No	
Marital Status	Single	Count	836	2684	3520
		% within Marital Status	23.8%	76.3%	100.0%
	Married	Count	124	351	475
		% within Marital Status	26.1%	73.9%	100.0%
	Other	Count	1	6	7
		% within Marital Status	14.3%	85.7%	100.0%

Chi Square test statistic - $\chi^2_{(4)} = 11.673$ (p=0.441)

Influence of Educational Attainment on EUY

The Chi Square test statistic is significant (p=0.000). Thus, it can be concluded that there is a significant influence of educational attainment on EUY. The percentage of educated youth unemployed among those who passed G. C. E. (O/L) examination (82.0%) is significantly higher than that of those who passed G. C. E. (A/L) examination (69.7%) (Table 13).

Table 13: Influence of Educational Attainment on EUY

			Labour Force		Total
			Yes	No	
Education Attainment	Passed G.C.E. (O/L)	Count	368	1678	2046
		% within Education Attainment	18.0%	82.0%	100.0%
	Passed G.C.E. (A/L)	Count	593	1363	1956
		% within Education Attainment	30.3%	69.7%	100.0%

Chi Square test statistic - $\chi^2_{(5)} = 83.327$ (p=0.000)

Influence of Literacy in English on EUY

The results of the chi square test statistics (4.412, p=0.036) indicate that there is a significant influence of the level of English literacy on EUY. According to the Table 14, among the educated youth who have the ability to read and write, 74.3% are not in the labour force and among the youth who are unable to read and write, 77.2% are not in the labour force. As chi square is significant, it can be concluded that among the English literate persons, the percentage of educated unemployed youth is significantly lower than the percentage of educated employed youth among non-English literate persons (Table 14).

Table 14: Influence of Literacy in English on EUY

			Labour Force		Total
			Yes	No	
English Literacy	Ability to read and write	Count	421	1216	1637
		% within English Literacy	25.7%	74.3%	100.0%
	Unable to read and write	Count	540	1825	2365
		% within English Literacy	22.8%	77.2%	100.0%

Chi Square test statistic - $\chi^2_{(6)} = 4.412$ ($p=0.036$)

Influence of Residential Sector on EUY

Results of the Chi Square statistics (17.079, $p=0.000$) confirms that there is a significant influence of the living area on EUY. In the urban sector 70.4%, in the rural sector 77.4% and in the estate sector, 78.0% are not in the labour force. It can be concluded that among the sectors, the percentage of educated unemployed youth in both rural, and estate sector is significantly higher than that of in urban sector when each variable is considered separately.

The results of the Chi Square analysis confirmed that out of all the selected variables namely, gender, religion, education attainment, literacy level in English and residential sector have significant impact while race and marital status are not significantly impact on the unemployment of the educated youth in Sri Lanka.

Table 15: Influence of Residential Sector on EUY

			Labour Force		Total
			Yes	No	
	Urban	Count	237	564	801
		% within Sector	29.6%	70.4%	100.0%
Residential Sector	Rural	Count	704	2406	3110
		% within Sector	22.6%	77.4%	100.0%
	Estate	Count	20	71	91
		% within Sector	22.0%	78.0%	100.0%

Chi Square test statistic - $\chi^2_{(7)} = 17.079$ ($p=0.000$)

Furthermore, for each level of the above seven factors (Table 16), the percentage of educated unemployed youth is higher than that of educated employed youth. In order to find out the most significant variables for the model, four approaches can be used (discussed in Methodology).

Table 16: Reference Categories used for the model

Variables	Reference Category
Gender	Female
Race	Other
Religion	Other
Marital Status	Other
Education Attainment	Passed G.C.E. (A/L)
Literacy in English	Unable to read and write
Residential Sector	Estate

As similar results were obtained in all four methods, only the results obtained in Forward LR is illustrated in Table 17 and 18.

Table 17: Model Summary for Binary Logistic Regression

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	4328.207 ^a	.021	.031
2	4230.149 ^a	.044	.067
3	4209.651 ^a	.049	.074
4	4195.495 ^a	.053	.079
5	4181.065 ^b	.056	.084

According to Table 18, the value given in the fourth column is the probability of the chi square statistic used to test the null hypothesis (H_0 : Model is significant). In other words, this is the probability of obtaining this chi-square statistic (27.309) for goodness of fit of the model. In this case, the models in each steps are not significant as the corresponding p values are less than 0.05. This implies that the model can be further improved by including the interaction terms.

Table 18: Results of Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	0.000	0	.
2	23.802	2	.000
3	22.069	6	.001
4	24.573	7	.001
5	27.309	8	.001

According to the results in Table 19, it can be interpreted that there is a significant odds of educated males (0.439) who are unemployed compared to females. In comparison to the other category of religion, the most significant religion is Hindu (1.973) followed by Muslims (1.774) and Buddhists (1.409) who are among the unemployed educated youth.

Table 19: Final Results of the Logistic Regression Model via Forward Selection (LR) Method

	B	S.E.	Wald	df	Sig.	Exp(B)
Gender (X1)						
Male	-.824	.080	106.965	1	.000	.439
Religion (X3)						
Buddhist	.343	.128	7.187	1	.007	1.409
Hindu	.679	.163	17.334	1	.000	1.973
Muslim	.573	.169	11.517	1	.001	1.774
Marital Status (X4)						
Single	-.561	1.129	.247	1	.619	.571
Married	-1.016	1.134	.802	1	.370	.362
Education Attainment (X5)						
Passed G. C. E. (O/L)	.780	.079	98.674	1	.000	2.182
Residential Sector (X7)						
Urban	-.166	.281	.349	1	.555	.847
Rural	.200	.275	.529	1	.467	1.221
Constant	1.286	1.157	1.234	1	.267	3.618

According to Table 19, the fitted model can be written as follows.

$$Log\left(\frac{P}{1-P}\right) = 1.286 - 0.824 (x_{1=1}) + 0.343 (x_{3=1}) + 0.679 (x_{3=2}) + 0.573 (x_{3=3}) - 0.561 (x_{4=1}) - 1.016 (x_{4=2}) + 0.780 (x_{5=1}) - 0.166 (x_{7=1}) + 0.200 (x_{7=2})$$

Odds of unemployed single youth is significantly higher (0.571) than those who are married (0.362). The results of the model indicate that the significant odds of unemployed youth who passed G. C. E. (O/L) examination (2.182) compared to those unemployed who passed the G. C. E. (A/L) examination. Further, the odds of educated unemployed youth representing the rural sector increases by 1.221 compared to those who are in the urban sector. In order to check the goodness of fit of the model, predicted values were obtained at the critical level probability of 0.5 (Table 20).

According to Table 20, 3027 are predicted correctly as unemployed (99.5%) and from 961 educated youth employed, 21 are predicted correctly as employed (2.2%). The overall correct classification by the model is $\frac{21+3027}{4002} = 76.2\%$. Based on the results obtained, it can be concluded that out of the selected seven variables, five variables significantly influence the educated youth unemployment and in order to study more details, 2-way interactions were tested by using the Forward LR method. However, inclusion of all interactions makes the model complicated. Therefore, among the ten possible 2-way interactions, only four 2-way interactions were identified by the model.

Table 20: Observed and Predicted Results of the EUY

			Predicted Group		Total
			Yes	No	
Labour Force	Yes	Count	21	940	961
		% within Labour Force	2.2%	97.8%	100.0%
	No	Count	14	3027	3041
		% within Labour Force	0.5%	99.5%	100.0%
Total	Count	35	3967	4002	
	% within Labour Force	0.9%	99.1%	100.0%	

According to Table 21, the explained variation in the dependent variable based on the final model varies from 8.3% to 12.5% depending on Cox & Snell R² and Nagelkerke R² respectively.

Table 21: Model Summary for Two way Interactions

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	4251.936 ^a	.039	.059
2	4137.147 ^a	.066	.099
3	4117.842 ^b	.071	.106
4	4097.599 ^b	.076	.113
5	4080.992 ^b	.079	.119
6	4067.485 ^b	.082	.124
7	4063.532 ^b	.083	.125

Table 22 indicates the probability of obtaining this chi-square statistic (6.704) for goodness of fit of the model. In this case, the model is statistically significant as $p=0.460$ ($p>0.05$). The SPSS output of the final model with 2-way interactions is shown in Table 23.

Table 22: Results of Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	.000	1	1.000
2	17.645	3	0.001
3	.039	3	0.998
4	6.793	7	0.451
5	6.166	7	0.520
6	6.775	7	0.453
7	6.704	7	0.460

Table 23: Final results of the Two way interactions via Forward Selection (LR) Method

	B	S.E.	Wald	df	Sig.	Exp(B)
Religion (X3)			33.712	3	.000	
Buddhist	.412	.171	5.777	1	.016	1.509
Hindu	1.109	.234	22.426	1	.000	3.032
Muslim	1.115	.253	19.349	1	.000	3.048
Education Attainment (X5)						
Passed G. C. E.(O/L)	1.152	.120	91.562	1	.000	3.165
Residential Sector (X7)			15.831	2	.000	
Urban	-.158	.288	.300	1	.584	.854
Rural	.224	.281	.633	1	.426	1.251
Gender (X1) * Education Attainment (X5)						
Male * Passed G.C.E. (O/L)	-.585	.168	12.130	1	.000	.557
Gender (X1) * Religion (X3)			16.434	3	.001	
Male * Buddhist	-.206	.257	.642	1	.423	.814
Male * Hindu	-.853	.333	6.566	1	.010	.426
Male * Muslim	-1.046	.352	8.814	1	.003	.351
Gender (X1) * Marital Status (X4)			62.352	2	.000	
Male * Single	-.181	.257	.500	1	.480	.834
Male * Married	-2.650	.401	43.641	1	.000	.071
Gender(X1) * English Literacy(X6)						
Male * Able to read and write	.239	.121	3.919	1	.048	1.270
Constant	.366	.310	1.396	1	.237	1.442

The fitted model with the two-way interactions can be written as follows.

$$\begin{aligned} \text{Log} \left(\frac{P}{1-P} \right) = & 0.366 + 0.412 (x_{3=1}) + 1.109 (x_{3=2}) + 1.115 (x_{3=3}) + 1.152 (x_{5=1}) - 0.158 (x_{7=1}) \\ & + 0.224 (x_{7=2}) - 0.585 (x_{1=1*} x_{5=1}) - 0.206 (x_{1=1*} x_{3=1}) - 0.853 (x_{1=1*} x_{3=2}) - 1.046 (x_{1=1*} x_{3=3}) \\ & - 1.181 (x_{1=1*} x_{4=1}) - 2.650 (x_{1=1*} x_{4=2}) + 0.239 (x_{1=1*} x_{6=1}) \end{aligned}$$

According to Table 23, it can be interpreted that there is a significant odds of unemployed educated males who are Buddhists (0.814) followed by male Hindus (0.426) and male Muslims (0.351) when females with other category are controlled. Similarly, it can be seen that there are more single youth males (0.834) than the married males (0.071) who are educated and not in the labour force. In addition, there is a significant amount of unemployed educated youth males in the rural sector (1.251) than the urban sector

(0.854). Regarding the education attainment of youth, there is a significant amount of unemployed males who passed G. C. E. (O/L) examinations (0.557) compared to unemployed males who passed G. C. E. (A/L) examination. Similarly, more unemployed males are English literate (1.270) compared to females who are illiterate in English. In order to check the goodness of fit of the model, predicted values were obtained at the critical level probability of 0.5 (Table 24).

Table 24: Observed and Predicted results of the EUY

			Predicted Group		Total
			Yes	No	
Observed	Yes	Count	59	902	961
		% within Y	6.1%	93.9%	100.0%
	No	Count	13	3028	3041
		% within Y	0.4%	99.6%	100.0%
Total	Count		72	3930	4002
	% within Y		1.8%	98.2%	100.0%

According to Table 24, 3028 are predicted correctly as unemployed (99.6%) and from 961 educated youth employed, 59 are predicted correctly as employed (6.1%). The overall correct classification by the model is $\frac{59+3028}{4002} = 77.1\%$. In summary, it is proved that the best-fitted logistic method of selection is invariant by the method of the identification of significant variables as results were same for all the forward and backward methods under LR and Wald criteria. Gender (X1), religion (X3), marital status (X4), education attainment (X5) and residential sector (X7) were found to be the most significant variables. In the two-way interactions, Gender (X1) and Religion (X3), Gender (X1) and Marital status (X4), Gender (X1) and Education attainment (X5), Gender (X1) and English Literacy (X6) are found to be significant on the educated youth unemployment. The model with main effects only was improved by considering 2-way interaction terms and by the model with five main effects (gender (X1), religion (X3), marital status (X4), education attainment (X5) and residential sector (X7)) and four 2-way interaction terms were found significant based on Hosmer and Lemeshow Test (H-L statistic=6.704, p=0.460). The overall correct classification rate was 77.1%.

Conclusions

This analysis pointed out that females among the youth are more unemployed than males. In addition, among the unemployed youth, majority are Sinhalese and Buddhist. In terms of their marital status, majority of the unemployed youth are single. With respect to their educational qualifications, majority who are not in the labour force have obtained G. C. E. O/L qualification. In addition, most of these unemployed educated youth are in the estate sector. According to the analysis of 2-way frequency table, it shows that out of the selected seven variables gender, religion, literacy in English, education attainment and the

sector do have significant influence while race and the marital status do not have significant influence with the educated youth unemployment in Sri Lanka.

Binary logistic model with five variables (gender, religion, marital status, education attainment, sector residential) and four 2-way interaction terms (gender and Religion, gender and marital status, gender and education attainment, gender and English literacy) were found to be significant to explain the variation of EUY. The overall correct classification is 77.1%.

Based on the above conclusions following recommendations can be given. Youth age group of (15-24) should be considered as a prime age group to be involved in the labour force irrespective of their gender. Among the youth population, as the proportion of educated females are more likely to be unemployed, it is necessary to create more chances for them in the job market as in some industries, gender discrimination takes place in hiring and recruitment process. According to the job market requirements, the secondary level and the tertiary level education system needs to be updated and the skills needs to be developed so that it would not be difficult for the females to find suitable jobs and contribute for the labour force.

Further, in order to increase the women involvement in labour force, it either is essential to initiate flexible working hours in companies on shift basis or as part time work, so that it would be a support for the females in balancing their personal life and work life simultaneously. With the use of technological advancements, it is high time to create job opportunities for women to work from home, which will increase the involvement of females in the labour force as in developed countries. In addition, the government can promote the concept of 'Entrepreneurship' as it would be more useful for both males and females to balance their life while earning a reasonable income and creating more employment opportunities for others as well.

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