INTRODUCTION

Rural development means the overall development of the rural areas with the betterment of the lifestyle of the people in those areas (Edirisinghe, 2019). In other words, rural development defines as increasing the physical, environmental, technological, economic, socio-cultural, and institutional factors in rural areas. However, the World Bank (2003) has defined rural development as improving the living standards of the masses of the low-income populations residing in rural areas, making rural development self-sustaining.

In Sri Lanka, the first approach to rural development was establishing the Rural Development Board in 1938. In 1940, nine Rural Service Centres (RSCs) were established in selected villages. Then, in 1948, people formed Rural Development Societies (RDSs), which were given the organisational framework to facilitate participation in rural development. Since then, different types of programs have been established in the country such, as the Integrated Rural Development Program (IRDP) in 1973, Jana Saviya Movement (JSM) in 1882, Jana Saviya Program (JSP) in 1988, and Samurdhi Program in 1995. According to the Department of Census and Statistics (2012), in Sri Lanka, 77.4% of the population lives in rural areas. Therefore, the economic activities in rural areas are centred on the primary sectors such as agriculture, forestry, livestock, and fisheries. According to the household income and expenditure survey in 2016, conducted by Census and Statistics Department in Sri Lanka, the poverty headcount index in rural was 4.3%, whereas urban remained at 1.9%, and the number of poor populations in rural is 693,956, which is higher than urban poor population. Rural contribution to total poverty in Sri Lanka is 82.2%, whereas urban contribution remained at 8%.

The primary goal of rural development is to boost the standard of the lifestyle of the rural people by eradicating poverty through the instrument of self-employment and wage employment programs, by providing community infrastructure facilities such as drinking water, electricity, road connectivity,
health facilities, rural housing, and education, and promoting decentralisation of powers, etc. (Jyothi, 2013; Divya, 2014; Nayak, 2012). Financial inclusion is another widely used strategy implemented in many developing countries to enhance the standard of living of the rural population, leading to increased rural development (Christabell, 2012). This may guide the rural people who cannot reach financial services through micro-savings, microcredit, money transfer, etc. (Levine, 1997). In step with the international organisation, the United Nations MDG Summit 2010, Financial Inclusion is defined as universal access, at an inexpensive cost, to a good range of financial services, provided by a spread of sound and sustainable institutions. Financial inclusion has five dimensions, i.e., accessibility, availability, usage, quality, and impact (Arputhamani, 2011; Prasannakumari, 2011; Hanning, 2010). In Sri Lanka, there has been a gentle increase in the density of economic institutions since 1990. As per the survey on GN divisions (2009/10), the common was 4.2 financial institutions per GN division. Increasing the importance of financial inclusion, the Central Bank of Sri Lanka regularly takes several initiatives and actions in governing and monitoring the financial inclusion system of the country. Also, National Financial Inclusion Strategy (2018/2019), in its report regarding the road map for sustainable finance in Sri Lanka for 2019 to 2030, has recognised financial inclusion as the third most important pillar out of six, which made this area more significant in the way of sustainable development in the country. Therefore, it is essential to know whether this financial inclusion impacts the country's rural development. It is essential when achieving financial sustainability and is critical for future policymaking.

Existing literature has recognised the importance of financial inclusion in the rural development of developing countries. Further, prior research literature stated that when financial inclusion is increasing, that can cause rural development. Regarding financial inclusivity in Sri Lanka, most studies have focused on financial inclusion policies, regulation, education, determinants, current financial inclusion status, challenges, and issues evident in the literature. But little is understood about how financial inclusion impacts rural development in Sri Lanka. Therefore, this empirical and practical gap in rural development and financial inclusion could remedy this situation through the current study.

**LITERATURE REVIEW**

**Conceptualisation and Hypothesis Development**

As Todaro (2015) defines, rural development has many such aspects, and it means improving the levels of living, including employment, education, health, nutrition, housing, and a variety of social services; decreasing inequality in the distribution of rural incomes and enhancing rural-urban balances in income and economic opportunities; and increasing the capacity of the rural sector to sustain and accelerate the pace of these improvements. Rural development may possibly be well-defined as the procedure of enlightening the excellence of life and economic good fortune of people living in rural
areas, often relatively isolated and sparsely populated areas. Diejemaoh (1973) sharpened rural development as a method of mounting the level of per capita income in the rural zones end to end with the development in the worth of the lifespan of the rural commonalities. It mentions a procedure of evolving and applying natural and human resources, technologies, infrastructural activities, institutions, organisations, and government rules and programs to inspire and rapidly up monetary growth in rural zones, offer jobs, and advance the excellence of rural lifespan. According to Amit (2009), Kelkar (2010), Thorat (2007), Sinha (2012), the key pointers of rural development are an increase in food ingestion, better clothing, renewed houses, building up of assets, banking facilities, number of schools and proportion of children presence school in a rural community, professional training progressions, quality of drinking water, percentage of children covered under immunisations, nutritional status of women and children, etc. Rendering to Tarsem Lal (2019), enlargement in rural zones could bring infrastructure, technology, health, education, and economy.

The World Bank (2015) well-defined financial inclusion as persons, commerce has entree to valuable and inexpensive financial products and facilities that encounter their requirements, such as transactions, payments, savings, and credit and insurance delivered responsibly and sustainably. Some researchers also captured the financial area from indicators such as household income or wealth and loan granted amounts. In the current study, a challenge has been made to review numerous studies carried on by scholars, researchers, and academicians to explore the role of Cooperatives in financial inclusion and socio-economic development. According to the World Bank (2015), they have identified three dimensions under financial inclusion: access, usage, and quality. Therefore, the current study used these three dimensions to measure financial inclusion.

Financial inclusion access defines as the first step to financial inclusion because that provides entry to the transactional accounts in the financial service providers' organisations. Transactional accounts provide access to store the money, send the money, and receive the money among people. Transactional accounts offer services by the gateway to other financial services such as credit facilities, insurance, investment in the business, or education. A significant amount of research studies connecting to financial inclusion through cooperatives were accompanied by Anil (2015), Barot and Barot (2015), Mehrotra and Yetman (2015), Vasmani (2015), Zuzana and Laurent (2015), Bosire et al. (2014), Archana (2013) and Arputhamani and Prasannakumari (2011). These studies concluded that financial inclusion through cooperatives is a process that goals at improving access to financial products and services needed by all segments of the society in general and weaker sections of the society in particular so that they have the chance to access the basic financial services ranging from savings, payments, and transfers to credit and insurance. Mir et al. (2014), Shabna (2014), Ugbajah and Nenna (2014), and Vinit (2014) in their study conclude that financial inclusion through cooperatives empowers vulnerable sections of the society to tackle poverty and promote inclusive development by increasing the economic opportunities for the poor and low-skilled rural households.
which lead towards socio-economic empowerment, economic development, poverty alleviation, and social inclusion. Sharma (2010) explained that access to financial services through Cooperative banks provides monetary fuel for economic development and is considered critical for achieving inclusive growth.

Moreover, Arya(2015) and Pashkova (2009) explained that macroeconomic evidence indicates that well-developed financial systems positively impact long-term economic development. Savitha and Jyothi in 2013 demonstrated that the accessibility of economic and efficient financial services to the majority of the population in a country fosters sustained rural development. Based on this ground, this study proposes its first hypothesis as,

\[ H1: \text{Financial inclusion access positively impacts the rural development of Sri Lanka.} \]

The second dimension of the study is quality. The world bank (2015) explains that quality refers to whether the above-mentioned financial products that people access meet the clients' requirements and range of options are available to the customers. The customers are well-aware of the financial products. Adedayo and Yusuf (2004) examined the credit structure and poverty reduction activities of Cooperative banks with the use of several anticipated benefits such as incidence of borrowing, loan amount, use of the loan, consumer goods purchased, assets acquired as variables for poverty reduction, better standard of living condition, etc. They found that the amount of loans given to the members is significant compared to the low standard of living in rural areas. Their findings on the use of loans show that 64.17 per cent of the loan was used for trade and investment, 4.62 per cent on children's education, 8.46 per cent on the purchase of business inputs, and 6.03 per cent were deployed in the acquisition of assets. Adebayo et al. (2010) focus on the impact of Cooperatives on rural development and poverty reduction in Rwanda. They reported that 93 per cent of the members claim that the loan taken is adequate, while 7 per cent disagree. The loan usage reveals 46 per cent was used for the construction of houses, 31 per cent for education, and 23 per cent for family users. In total, 92 per cent of the members pay their loan as and when due, while 8 per cent find it challenging to pay the loan. The study by Idowu and Salami (2011) found that due to flexible loan repayment structure and lower interest rates in Cooperative banks, the majority of the female entrepreneurs use more loans from Cooperative banks than other commercial banks. The literature mentioned above shows the range of options available to the customers and how it was used. Therefore, the hypothesis of this study can be derived as below.

\[ H2: \text{Financial inclusion quality positively impacts the rural development of Sri Lanka.} \]

The third dimension of the study is usage. According to the world bank definition, usage refers to how clients use the financial services and the regularity and duration of the financial services or financial products. Further, the world bank overview regarding financial inclusion mentioned that the countries where 80% or more have access to financial services or products push the people to have low-cost
accounts that could use mobile and digitally enable payments. According to the World Bank Findex data (2017), closer to one-third of the adults in the world are unbanked, and half of the unbanked population is included women, poor households that live in rural areas. Schumpeter (1934) argues that financial intermediaries like banks cause transformation in the path of economic progress by smoothing the allocation of savings, thus, resulting in productivity and growth. However, empirical studies have examined the usage indicators in measuring financial inclusion as the use of financial services maximises the benefit of financial inclusion for consumers and offers incentives for financial service providers (Demirgüç-Kunt 2018; Salazar 2018, Wale and Makina 2017, Zins and Weill 2016, Camara and Tuesta 2015, Demirgüç-Kunt and Klapper 2013, Demirgüç-Kunt 2013, Triki and Faye 2013). Camara and Tuesta (2015) found that gender, living in a rural area, having a low income, and low level of education may reduce the likelihood of a household using formal financial services. The most common barriers to the use of financial services include the lack of financial capital and thus the need for such services, the high cost, distance to, documentation required, and overall mistrust when dealing with financial institutions and religious reasons. Since the prior literature concluded that using financial services maximises financial inclusion, the current study derived the third hypothesis maximises below.

H3: Financial inclusion usage positively impacts the rural development of Sri Lanka.

METHODOLOGY

Sample and Data

The study's primary objective was to investigate the impact of financial inclusion on the rural development of Sri Lanka. Thus, the unit of analysis was at the country level. The methodological approach of the study was quantitative, and it used secondary data to test the hypotheses. Data were gathered from a sample spanning annually from 1996 to 2019. The study used two main secondary data sources for data collection purposes. Data for rural development were gathered from the World Bank database. Data for the financial inclusion access, quality, and usage were collected from the Annual Central Bank Socio-economic reports (2014).

Measurement of Variables

The study's conceptual framework comprises two variables – rural development representing the dependent variable and financial inclusion, the independent variable. Financial inclusion – the study's independent variable – was calculated using access, usage, and quality. Access means reflect the depth of outreach of financial services, such as the penetration of bank branches or point of sale (POS) devices in rural areas, or demand-side barriers that customers face to access financial institutions, such as cost or information. Usage means how clients use financial services, such as the regularity and duration of the financial product/service over time (e.g. average savings balances,
number of transactions per account, number of electronic payments made). Quality describes whether financial products and services match clients’ needs, the range of options available to customers, and clients’ awareness and understanding of financial products (World Bank, 2019). Therefore, it consisted of 72 sample observations & financial values was directly extracted from the Central Bank report.

The dependent variable of the study – rural development – was measured using the multidimensional poverty index (MPI). Three dimensions of education, health, and standard of living were used to calculate the multidimensional poverty index as suggested by (Lal, 2018). Under these three dimensions, there were six indicators. Education was measured using annual school attendance and consisted of 24 sample observations from 1996 – 2019. The annual infant death rate was used to measure health dimensions, including 24 sample observations from 1996 – 2019. In measuring living standards, four indicators of access to electricity, basic sanitation service, open defecation, and basic drinking water facility in the rural area were used. Thus, considered 96 sample observations during the period 1996 – 2019. The multidimensional poverty index was calculated using the following formula.

\[ MPI = H \times A \]

Where \( H \) denotes Multi-dimensional Poverty Head Count Ratio (Incidence), and \( A \) denotes the Intensity of Poverty.

The Multidimensional Poverty Index (MPI) was a product of incidence \((H)\) and intensity \((A)\). According to Alkire and Foster (2007), the multidimensional poverty index was driven by multiplying the multidimensional poverty headcount ratio \((H)\) by the intensity of poverty \((A)\). Since the current study focused on rural development, to measure the multidimensional poverty headcount ratio was driven by the rural population but not the total population because the entire population included the urban and estate population as well except the rural population

The following formulae were used to calculate the \( H \) and \( A \).

Multidimensional Poverty Head Count Ratio \((H)\)

\[
H = \frac{\text{Number of multidimensional poor population}}{\text{Total rural population}}
\]

The intensity of Poverty \((A)\)

\[
A = \frac{\text{Sum of deprivation scores of the multidimensional poor population}}{\text{total number of the multidimensional poor population}}
\]
Multidimensional Poverty Headcount Ratio (H) was calculated by dividing the Number of Multidimensional Poor populations by the total rural population. Multidimensional Poverty Headcount Ratio is commonly used to measure poverty incidence in Sri Lanka. The proportion of the poor population to the total population was defined as Headcount Index (HCI), and it was generally represented as a percentage (Department of Census and Statistics, 2006/07). In calculating the number of multidimensional poor populations as suggested by Alkire and Foster (2007), each person was assigned a deprivation score according to their household's deprivations in each of the five component indicators. The maximum score is 100 per cent, with each of the dimensions, namely Education, Health, and Living Standard, equally-weighted (thus, the maximum score in each dimension was 33.3 (100/3) per cent). The health and education dimensions have one indicator; therefore, each component was worth 33.3/1 (100/3) per cent. The standard of living dimension has four indicators; therefore, each component was worth 33.3/4 (100/12) per cent. To identify the multidimensional poor, the deprivation scores for each indicator were summed to obtain the household deprivation score. A cut-off of 33.3 per cent, which was equivalent to 1/3 of the weighted indicators, was used to distinguish between the poor and non-poor. The people whose deprivation score is greater than or equal to 20 per cent and less than 50 per cent are considered the vulnerable group regarding the multidimensional deprivation scores. The people having a deprivation score equal to or more than 50 per cent are considered the severely poor people in the country (Department of Census and Statistics, 2019).

Next, the intensity of poverty (A) meant the average proportion of indicators in which poor people are deprived was described as the intensity of their poverty (A). The average deprivation score was a multidimensional poor person experience (Department of Census and Statistics, 2019). The intensity of poverty (A) was taken from the sum of deprivation scores of the multidimensional poor population divided by the total number of the multidimensional poor populations.

Data Analysis

This study used both descriptive and inferential statistics for data analysis purposes. The primary analytical technique used to test the said hypotheses was an autoregressive distributed lag (ARDL) model, a time series technique. ARDL model was an ordinary least square (OLS) based model applicable for both non-stationary time series and times series with mixed order of integration (Bhattab, 2018). This model took enough lags to capture the data generating process in a general-to-specific modelling framework (Bhattab, 2018). Therefore, the study could be measured using the ARDL analysis, which was one of the regression models for the long run. Further, that could be used to access the relationship between the variables mentioned above in the long run. The data were analysed using the EViews 11 student version software, which originally stood for modern econometric, statistics, and forecasting package.
RESULTS AND DISCUSSION

To summarise the data set, descriptive data could be used because it explained the essential characteristics of the quantitative data (Hair et al., 2003). Descriptive statistics characteristics were beneficial when explaining the financial inclusion on rural development in the Sri Lankan context. Frequency distribution analysis showed by using the graphical and numeric way of presenting the results. It resulted in that access, usage, quality, and rural development. All the variables showed a trend that fluctuated over the period showing slight ups and downs, but it showed an overall increment over 24 years, which meant the development from 1996 to 2019.

Further, descriptive statistics showed that access, usage, and quality showed similar values for each variable since all three variables showed a similar trend for these 24 years, such as 1,986 and 1,996, respectively. The average value for rural development was 48% which is a considerable level of increment. Skewness assessed the extent to which a variable's distribution was symmetrical. If the distribution of responses for a variable stretched toward the right or left tail of the distribution, then the distribution was referred to as skewed (Joe Hair, 2017). However, it showed closer to zero in every variable, which showed normal distribution where there was no higher difference in mean and median in all the variables. Kurtosis was a measure of whether the distribution was too peaked (a very narrow distribution with most of the responses in the centre)” (Joe Hair, 2017). However, this showed the peaked distribution since the kurtosis values for all the variables showed greater than one which, was too peaked and called leptokurtic. Jarque-Bera test showed whether the variables were normally distributed or not. All the probabilities showed more than 0.05, which showed the normal distribution after all. Therefore, when considering all these variables' normality, it showed a normal distribution where the Null hypotheses could be accepted for all the variables which said the series was normally distributed.

When considering the Augmented Dickey-Fuller Test (ADF), all the variables, including financial inclusion access as Ya, financial inclusion usage as Yu, financial inclusion quality as Yq, were independent variables, and the only dependent variable was rural development as RD performed the test. Therefore, Ya, Yu showed the stationary in 1st difference, and Yq showed the stationary of the data set at the level. To measure the stationary of the variables, this study has considered two equations in the unit-root test that use only constant and constant with the trend. Those were as follows,

\[
\sum_{t=1}^{m} \Delta y_t = \alpha + \gamma y_{t-1} + \sum_{s=1}^{m} a_s \Delta y_{t-s} + \nu_t
\]

\[
\sum_{t=1}^{m} \Delta y_t = \alpha + \gamma y_{t-1} + \lambda t + \sum_{s=1}^{m} a_s \Delta y_{t-s} + \nu_t
\]
The unit root test measured whether the data set was stationary or not. In this test, the null hypothesis was the variable has a unit root. That meant the variable has not stationary. However, RD, Ya, Yu, Yq have the probability of 0.0001, 0.0001, 0.000, 0.0165, respectively, which were below 0.05, representing stationary.

The Phillips-Perron model is

\[ y_t = c + \delta t + a y_{t-1} + \epsilon(t). \]

Where \( \epsilon(t) \) is the innovation process, the test assesses the null hypothesis under the model variant appropriate for a series with different growth characteristics (\( c = 0 \) or \( \delta = 0 \)) (Perron, 1987). It showed RD, Ya, Yu, Yq have the probability of 0.000, 0.0000, 0.0000, 0.0172, respectively, which were below 0.05, and that represented the RD, Ya, Yu, have a stationary at the first difference where no trend and the only constant exist. However, Yq has shown stationary at the level where trends and constant exist.

The KPSS test is based on linear regression. It breaks up a series into three parts: a deterministic trend (\( \beta t \)), a random walk (\( r_t \)), and a stationary error (\( \epsilon_t \)), with the regression equation:

\[ x_t = r_t + \beta t + \epsilon_t. \]

If the data is stationary, it will have a fixed element for an intercept, or the series will be stationary around a fixed level (Wang, 2006). The test uses OLS to find the equation, which differs slightly depending on whether you want to test for level stationarity or trend stationarity (Kocenda, 2017). A simplified version, without the time trend component, is used to test level stationarity. However, RD, Ya, Yu, Yq have the probability of 0.1246, 0.1224, 0.1297, 0.1053, respectively, which were above 0.05, and that represented the RD, Ya, Yu, Yq have a stationary at the level where trend and constant were there.
Table 1: Short term Analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.*</th>
</tr>
</thead>
<tbody>
<tr>
<td>RD (-1)</td>
<td>0.597844</td>
<td>0.235441</td>
<td>2.539253</td>
<td>0.0219</td>
</tr>
<tr>
<td>ACCESS</td>
<td>0.801028</td>
<td>4.469958</td>
<td>0.626634</td>
<td>0.0397</td>
</tr>
<tr>
<td>QUALITY</td>
<td>0.943747</td>
<td>0.694996</td>
<td>1.357917</td>
<td>0.0333</td>
</tr>
<tr>
<td>USAGE</td>
<td>0.30006</td>
<td>1.57574</td>
<td>0.190424</td>
<td>0.0314</td>
</tr>
<tr>
<td>C</td>
<td>17.2875</td>
<td>9.433798</td>
<td>1.832507</td>
<td>0.0856</td>
</tr>
</tbody>
</table>

R-squared | 0.96425 | Mean dependent var | 49.07783 |
Adjusted R-squared | 0.950843 | S.D. dependent var | 5.048991 |
S.E. of regression | 1.119427 | Akaike info criterion | 3.309301 |
Sum squared resid | 20.04987 | Schwarz criterion | 3.654886 |
Log-likelihood | -31.057 | Hannan-Quinn criteria. | 3.396215 |
F-statistic | 71.92478 | Durbin-Watson stat | 2.250595 |
Prob(F-statistic) | 0 |

Source: Authors' work based on the primary data

The above table showed how the probability of the short-run, and if the p-value is less than or equal the 0.05, then hypotheses could be accepted in the short run. Here, the p-value (F-statistic) showed zero (0), which was the whole model was incredibly significant. In addition, the significance of the variables in probability was shown as 0.0219, 0.0397, 0.0333, 0.0314 for rural development, financial inclusion access, usage, and quality, respectively. In the current study, according to the above table, the Adjusted R-square represented that the individual variables have described 95.08% of the dependent variable. As the value was 95.08%, the model was well fitted.

To examine the long-run impact of financial inclusion on rural development, the Bound Testing approach was employed. Firstly, Pesaran et al. (2001) advocated using the ARDL model to estimate level relationships because the model suggests that if the order of the ARDL has been identified, the relationship may be estimated by OLS method. Secondly, the bounds test for cointegration permits a mixture of I (1) and I (0) variables as regressors. In other words, the order of integration of appropriate variables may not necessarily be the same; hence the ARDL technique has the advantage of not requiring specific identification of the order of the underlying data. Thirdly, the method fits small or finite sample sizes (M. Hashem Pesaran, 2001).

\[ Y_{it} = \beta_0 + \beta_1 Y_{it-1} + \beta_2 Y_{it-2} + \beta_3 Y_{it-3} + \epsilon_t \]

The above equation showed the study's dependent variable as rural development while representing the independent variables of financial inclusion access, usage, and quality.
Table 2: Long Term Analysis

Conditional Error Correction Regression

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>2.032871</td>
<td>2.436941</td>
<td>0.83419</td>
<td>0.4165</td>
</tr>
<tr>
<td>RD (-1) *</td>
<td>0.4276</td>
<td>0.051705</td>
<td>0.53377</td>
<td>0.0408</td>
</tr>
<tr>
<td>ACCESS**</td>
<td>0.24909</td>
<td>5.298521</td>
<td>0.80194</td>
<td>0.0343</td>
</tr>
<tr>
<td>QUALITY**</td>
<td>0.241285</td>
<td>0.509967</td>
<td>0.080957</td>
<td>0.0365</td>
</tr>
<tr>
<td>USAGE**</td>
<td>0.967247</td>
<td>1.083168</td>
<td>0.89298</td>
<td>0.0451</td>
</tr>
</tbody>
</table>

* p-value incompatible with t-Bounds distribution.

** Variable interpreted as Z = Z (-1) + D(Z).

Levels Equation

Case 2: Restricted Constant and No Trend

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCESS</td>
<td>0.5604</td>
<td>364.8307</td>
<td>0.42201</td>
<td>0.0286</td>
</tr>
<tr>
<td>QUALITY</td>
<td>0.495917</td>
<td>18.49485</td>
<td>0.080883</td>
<td>0.0365</td>
</tr>
<tr>
<td>USAGE</td>
<td>0.94697</td>
<td>71.34977</td>
<td>0.4912</td>
<td>0.03</td>
</tr>
<tr>
<td>C</td>
<td>73.65851</td>
<td>53.08944</td>
<td>1.387442</td>
<td>0.1843</td>
</tr>
</tbody>
</table>

EC = RD – (0.5604*D(YA) +0.4959*D(YQ) +0.9470*D(YU) +73.6585)

F-Bounds Test

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>Value</th>
<th>Signif.</th>
<th>I (0)</th>
<th>I (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>4.406423</td>
<td>10%</td>
<td>2.08</td>
<td>3</td>
</tr>
<tr>
<td>K</td>
<td>5</td>
<td>5%</td>
<td>2.39</td>
<td>3.38</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.50%</td>
<td>2.7</td>
<td>3.73</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1%</td>
<td>3.06</td>
<td>4.15</td>
</tr>
</tbody>
</table>

Source: Authors' work based on the primary data

The above table showed the probability of the long-run, and if the p-value is less than or equal to 0.05, then hypotheses could be accepted in the long run. Here, the variables' significance was shown in probability as 0.0408, 0.0343, 0.0365, 0.0451 for rural development, financial inclusion access, usage, and quality, respectively at the level. The F-statistic of the study was 4.4406423, which was higher than the I (0) value, which was 2.08.

EC = RD - (0.5604*D(YA) +0.4959*D(YQ) +0.9470*D(YU) + 73.6585)

The Breusch-Godfrey Serial Correlation LM Test showed the probability of F statistic as 0.5268 and the probability of Chi-square as 0.3656. Both were accepted the null hypothesis, and there was no serial correlation up to 2 lags (Godfrey, 1988). When considering the probability of F-statistic, the probability of Chi-square showed 0.6638 and 0.582, respectively, which were more than 0.05, and
accepting the Null hypothesis where the study consisted of homoscedasticity. Therefore, it confirmed the non-violation of the heteroscedasticity test.

The Autoregressive Distributed Lag model was employed with a maximum one lag for the study's dependent variable named rural development to examine the short and long-run impact of financial inclusion on rural development. The regressors of the survey used zero lags in the model. The advantage of this model was the researcher could run the model even without lags for some variables while other variables with the lags (Min B.Shresthaa, 2018).

The results obtained through the analysis technique time series analysis showed that there is a relationship between financial inclusion quality with rural development, it showed a significant relation with financial inclusion access and usage respectively and represented the positive relationship where if the financial inclusion is high, the rural development also will be increased which does not contradict with the results from studies in the other countries. A study conducted in India showed that the confirmed a relationship between the variables such as financial development and rural-urban earning gap, and the evidence suggested that financial development, economic growth, and consumer prices aggravated rural-urban income inequality in the long run (Tiwari, 2013). Another Indian study again conducted in 2019 concluded that financial inclusion through cooperatives has a direct and significant impact on rural development. The results supported the notion that financial inclusion was a strategy of inclusive growth. Still, inclusive growth itself was a subset of a larger set of inclusive development, which meant that the benefit must reach all, particularly the women and the children, minority groups, the extremely poor and those pushed below the poverty line by natural and human-made disasters (Lal, 2019).

Moreover, financial inclusion is significant under the current study when considering rural development. Hence financial inclusion can also be considered when continuing research on this core domain though the current research is not contrary to the previous findings. Therefore, the researcher concludes that these two variables should be considered in future studies of rural development to build a long-term attraction and, on the other hand, to increase the rural development and to implement the lifestyle in the rural areas compared to urban areas.

CONCLUSION

In summary, this study attempted to investigate the impact of financial inclusion on the rural development of Sri Lanka, particularly during the period from 1996 to 2019. The study found that financial inclusion and rural development are positively related in the Sri Lankan context.
When considering the financial inclusion prior literature, it resulted in a positive relationship between financial inclusion and rural development in consistence with the existing findings such as Lal, T. (2019). This study pointed out that financial inclusion through cooperatives had a direct and significant impact on rural development. Further, the results supported the notion that financial inclusion was a strategy of inclusive growth, but inclusive growth itself was a subset of a more extensive set of inclusive development. The study conducted by Aviral Kumar Tiwari, Muhammad Shahbaz, and Faridul Islam (2013) regarding financial development and rural-urban income gap suggested that the results confirmed a relation among the variables. Evidence indicated that financial development, economic growth, and consumer prices aggravated rural-urban income inequality in the long run. Mir et al. (2014), Shabna (2014), Ugbajah and Nenna (2014), and Vinit (2014) conclude that financial inclusion through cooperatives empowers vulnerable sections of the society to tackle poverty and promote inclusive development by increasing the economic opportunities for the poor and low-skilled rural households which lead towards socio-economic empowerment, economic development, poverty alleviation, and social inclusion.

However, regarding the Sri Lankan context, there is still illegal financial activities that badly affect the rural people. In addition, even though rural people go to the banks and get the facilities provided to them, they should clearly understand what financial product is more suitable and at what time and where these can be applied. Therefore, they should be consulted by correct time, place, correct choice about financial products rather than seeking institutions' profit and pushing people more into a problematic situation. Cooperative banking as an institution plays an incredibly significant role in achieving the objective of a countless degree of financial inclusion in the country by bringing together people's resources with small means and providing them with access to different financial services. These banks offer the credit requirement of people with a limited resource mobilisation scope living in rural areas with considerably higher social responsibility. Cooperative banks may encourage modernisation by facilitating the dissemination of new technologies, mobilising self-help, and motivating people to make better use of their self-help potential, thus offering an economic future for rural youth in the country.

**FUTURE RESEARCH DIRECTIONS**

Future research may conduct about the above-mentioned modernisation facilities and at which level in Sri Lanka now and considering how much that helps improve the country's financial inclusion extend. Further, the current study focused only on the rural corporative banks. For future studies, researchers can examine the financial inclusion in the country without constraining to the rural area and including the licensed commercial banks. Those should be considered in future research to determine the financial inclusion impact on rural development as well. Therefore, the researcher concludes that these two variables should be considered in future studies of rural development to build a long-term
attraction and, on the other hand, increase rural development and implement the lifestyle in rural areas compared to urban areas.

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