Journal of Informatics and Web Engineering
Vol. 2 No. 1 (March 2023) eISSN: 2821-370X

The Impact Of The Telecommunication Industry As A Moderator on Poverty Alleviation and Educational Programmes To Achieve Sustainable Development Goals In Developing Countries

S.K.C. Ruklani Wickramasinghe[1]*, Kamal ABD Razak[2]
[1,2] Malaysia University of Science and Technology, Jalan PJU 5/5, Kota Damansara, 47810 Petaling Jaya, Malaysia
**Corresponding author: (siyambalape@phd.must.edu.my; ORCiD: 0000-0003-0794-7048)*

Abstract - The purpose of this study is to investigate the influence of the telecommunications industry's contribution to sustainable development in developing nations. A detailed literature study is conducted for this purpose, and a conceptual framework is offered. To validate the proposed conceptual framework, we conducted multiple case studies involving companies in the telecommunications industry from various countries. These findings improved the suggested conceptual framework produced for this study. However, despite the contributions of the telecommunications industry to the Sustainable Development Goals, no study has been conducted to examine how they have benefited poverty reduction and educational programmes in Sri Lanka. The overall purpose of this research is to investigate the role of multinational telecommunications firms as a moderator in achieving sustainable development goals through poverty and education efforts. This study will use a positivist approach. The researchers' research technique would be deductive since they want to draw conclusions based on the hypotheses produced on the questionnaire as part of the quantitative research procedure. The quantitative approach was employed as the primary data collection method. As part of the preliminary research, the telecommunications industry, and academics with a doctorate degree in socioeconomics were questioned. The preliminary study findings revealed that the telecommunications industry has played a significant role in accomplishing sustainable development goals in many countries, and the current study concentrated on developing nations with a particular focus on Sri Lanka. The major findings of a pilot study indicated that contact between the communications industries is required for linkages and spillovers that may assist nations' sustainable development. Furthermore, our findings indicated that increased contributions to education might help Sri Lanka achieve its poverty eradication and sustainable development goals.

Keywords — Telecommunication Industry, Sustainable Development Goals, Developing Countries, Poverty Alleviation, Educational Programmes

Received: 14 December 2022; Accepted: 09 February 2023; Published: 16 March 2023

Journal of Informatics and Web Engineering
https://doi.org/10.33093/jiwe.2023.2.1.3

Published by MMU Press. URL: https://journals.mmupress.com/jiwe

I. INTRODUCTION

The telecommunications industry is critical to a country's overall growth. It not only promotes economic prosperity, but it also acts as a critical platform for long-term development by bringing cutting-edge solutions to social and environmental issues. Through the infrastructure it develops, telephony, and rural telephony, telecommunications may directly contribute to the execution of environmental programmes and seeks to offer an impetus for multi-sectoral integrated development, therefore producing employment, money, and prosperity. Telecommunications and digital communications are allowing data to be transmitted to individuals at a quicker and more efficient rate than ever before. Individuals and society as a whole are more aware of what is going on in their immediate surroundings and throughout the world. On the other hand, it is one of the most important industries that supports the nation's economic growth both directly and indirectly. The communications industry is supported by digital infrastructure. Among them are fibre, telecommunications towers, active networks, and data centers. Furthermore, suppliers of fixed and mobile broadband, data centres, cloud computing, and other services such as broadband connections, phone, video, and e-commerce.The industry provides a variety of attractive opportunities for private sector investment. Significant FDI is being directed at Sri Lanka's telecommunications industry. As communications consumption has expanded at an alarming rate, the overall fixed line and mobile telephone density has increased, mostly owing to an increase in mobile consumers [6].

In sharp contrast to many other businesses, the telecommunications industry has generally been exempted from severe COVID-19-related restrictions, such as stay-at-home orders and quarantine regulations. More people are working from home and using video conferencing to conduct meetings, resulting in a temporary increase in data traffic and increased use of broadband services, which has benefited certain telecom carriers. In reality, traffic growth has demonstrated an increased reliance on connectivity and digital services [38]. At present, Students can access online lessons, assignments, study materials, and exercises from any location. There will be no educator-student contact. Students will thus study alone. Internet-based Online education enables students to study from any location. Online education also benefits students with limited time. In contrast to face-to-face learning, students can pause and repeat video clips to better comprehend the course. Both online and in-person education are equally effective. Learning quality is important. The content of online learning should be improved. Online education may be highly beneficial if implemented properly. Discursive, adaptable, creative, interactive, and reflective components that are integrated into the learning environment are very advantageous. According to studies, online education enhances student performance. However, The existence of Covid-19 was such a significant changer in all sectors that traditional learning, working, selling, and even living practices were altered to combat Covid-19. Because of the dearth of expertise in dealing with pandemics, the impact on most industries was enormous [33].

The COVID-19 pandemic has had a particularly negative impact on the social and economic spheres in low- and middle-income developing countries, including Sri Lanka, due to effects such as supply chain disruption, a decline in international remittances, and a decline in foreign direct investments, among others. To address the COVID-19 pandemic's challenges, build a better world, and accomplish the SDG targets, all countries must work together and collaboratively. With the pandemic, it is critical to support the worst-affected industries, which account for the majority of the economy and jobs, such as small and medium enterprises (SMEs), export industries, the apparel industry, and tourism, for them to recover, but this necessitates the assistance of other countries. Regional organizations, the business sector, international financial institutions, civil society, and academia can all help the 2030 Development Agenda succeed by stimulating action and providing expertise and financing.

The term "sustainable development" (SD) originally appeared in the 1987 Brundtland Commission report, which emphasized the significance of society, the environment, and the economy in order to "meet the demands of the present without jeopardising future generations' ability to satisfy their own requirements." In Rio, Agenda 21 highlights the UN's adoption of SD and sustainable agriculture. Agenda 21 was developed and implemented concurrently with the improvement of the new CAP in order to promote social, environmental, and economic progress. The three SD pillars were then developed into eight millennium objectives, twenty-one targets, and sixty indicators between 2000 and 2015

[19]. The Sustainable Development Goals (SDGs) and objectives (169), which are now firmly included in the UN Agenda for Sustainable Development, are measured using a significantly broader set of indicators (300+) to analyze their progress and impact [7].

It demonstrates that the telecommunications sector met its commitments to the Sustainable Development Goals (SDGs), as stated in the Groupe Speciale Mobile Association [15], which indicates that the mobile sector increased its contribution to all 17 SDGs despite the enormous challenges posed by the epidemic. Despite the fact that the mobile communications community has recognized the critical role that mobile communications play in attaining the UN SDGs, the strategy employed thus far has been primarily driven by economic or commercial concerns. There is a danger that a strictly economic plan may not always assist the community's marginalised groups. People who, for whatever reason, are unaware of the Internet's value are an example. Community networks may alternatively be formed when individuals see the importance of connectivity, even if the economics are not yet in place. To guarantee that the perspectives of genuine users are heard, communities must be properly incorporated into any bodies responsible for establishing policy and making decisions [26]. According to their study, [10], the 5th generation of wireless systems, or 5G, is regarded as the next generation of mobile wireless networks and is acknowledged as a considerable improvement over the current conventional mobile wireless networks. Not only will 5G mobile wireless networks be an improved version of 4G mobile wireless networks, but they will also offer a number of new features not seen in existing mobile wireless networks. According to the International Telecommunications Union (ITU), users would benefit from the adoption of 5G in three scenarios. The three scenarios include mobile broadband scenarios, massive machine-type communications, and ultra-reliable and low-latency communications. These circumstances are drastically dissimilar, necessitating networks that can manage a large number of connected devices in a short amount of time while also delivering low latency, high bandwidth, high throughput, and ubiquitous connectivity.

The current COVID-19 pandemic epidemic has significantly compelled businesses to digitise their operational operations. Although the use of digital platforms is not new, little study has been conducted on how these platforms improve policy integration in the public sector. Telecommunications, one of Sri Lanka's most active businesses, plays an important role in investment, employment, productivity, innovation, and overall economic growth, both directly and indirectly. The country benefits from and makes considerable use of the resources employed by its multinational enterprises [6].

With 22 million people served by mobile operators, Sri Lanka's telecom business is oversaturated. It has grown substantially in the last ten years. Furthermore, it is gaining popularity as a global IT business process outsourcing (BPO) hub in a variety of critical industries. According to Kearney, the telecoms industry was ranked 25th among the top 50 global outsourcing sites in 2019 [21]. Dialog Axiata, SLT's Mobitel, Hutch and Airtel, Lanka Bell, and TATA Communications are currently among the six international telecommunications providers in Sri Lanka holding licences. The surging mobile and internet demand, rising purchasing power, and increased consumer desire for smartphones, all of which have resulted in a positive growth prognosis for the industry, are propelling Sri Lanka's telecommunications sector forward. Only Dialog Broadband (Pvt) Ltd. and SLT PLC are authorised to provide international telecommunications services under their primary licenses issued under Section 17 of the Sri Lanka Telecommunications Act No. 25 of 1991, as amended.

Despite the contributions of the telecommunications industry to the 17 SDGs, no study has been conducted to examine how they have benefited poverty reduction and educational programmes in Sri Lanka. The research will also look at how much Sri Lankan telecom companies have contributed to such programmes. There have also been no studies on the barriers that prevent Sri Lanka's telecommunications sector from supporting sustainable development goals.

The goal of this study is to find out how the telecommunications industry can help with social, economic, and environmental sustainability in developing countries.

Therefore, the main purpose of this research is to investigate the impact of multinational telecommunications corporations on sustainable development goals. Because the SDGs are interconnected, achieving one leads to progress on the others. As a result, in terms of time, the current study will concentrate on poverty reduction in relation to SDG target 01 (no poverty) and educational programmes in relation to SDG goal 04 (quality education).

II. LITERATURE REVIEW

A. PERSPECTIVES ON TELECOMMUNICATIONS AND SUSTAINABLE DEVELOPMENT GOALS

In 2019, Zaballos, Iglesias, and Adamowicz evaluated the impact of digital infrastructure on meeting the Sustainable Development Goals (SDGs) in 12 Latin American and Caribbean nations. According to the analysis, digital infrastructure has a significant and measurable impact on a number of SDGs. Furthermore, there is a mismatch between the SDG goal and the indicator's level of performance in the sample nations. Notably, the examined nations do worse than average in terms of the SDGs relating to income and education. Furthermore, they argue that telecommunication may improve access to information about jobs and education in a country, increasing the likelihood that individuals will be able to overcome poverty (SDG 1), as well as food security and agricultural sustainability (SDG 2). Furthermore, communication may help minimise economic inequality by connecting rural regions with cities, giving less developed nations and rural inhabitants access to work, and fostering free information (SDG 10), [40].

According to Bello and Othman's 2019 study, about 263 million children worldwide are not enrolled in school. Nigeria is not an exception to the global challenge of basic education. Using Etisalat Telecommunications as a case study, they investigated how multinational corporations (MNCs) contribute to the advancement of basic education in Nigeria. According to the findings, Etisalat had a significant influence on the growth of Nigeria's education business, particularly basic education. Furthermore, the intervention is in line with SDG 4: Quality Education, since it has increased school enrolment, infrastructure, and, most crucially, learning quality [2].

Urama and Oduh (2012) evaluated the impact of telecommunications development on household poverty levels in Nigeria by looking at home per capita income, small business turnover, employment, and health. According to the findings, advances in telecommunications have a significant beneficial influence on poverty reduction in Nigeria. It also suggests that telecommunications are a more effective way of eliminating poverty [36]. Furthermore, it is a specialised technique for developing the telecom company and assuring real competition, and it is governed by the Nigerian The Communication Commission According to an investigation by GSMA (2016), the amount of digital connection impacts how soon the Sustainable Development Goals (SDGs) are accomplished [12]. According to the research, SDG implementation in sub-Saharan Africa was hindered by insufficient money, a lack of awareness of ICT capabilities, a dearth of technical skills, and the digital divide. According to research, the primary reasons for Africa's poor broadband capacity include a lack of infrastructure, high costs, lack of relevance, and the significance of distribution network coverage in remote rural areas and less networked regions. The rate at which the Sustainable Development Goals (SDGs) are attained is dependent on the level of digital connectivity, according to a GSMA (2018) study. According to the research, SDG implementation in sub-Saharan Africa was limited by insufficient money, a lack of awareness of ICT capabilities, a lack of technical skills, and the digital divide. According to research, the primary reasons for Africa's poor broadband capacity include a lack of infrastructure, high costs, lack of relevance, and the significance of distribution network coverage in remote rural areas and less networked regions. In addition, mobile communications may help accomplish the SDGs by providing infrastructure and access to digital services that promote development, efficiency, and sustainability [13].

Latif et al. (2017) analysed the relationship between telecommunications transmission and environmentally friendly growth in South Asian countries from 2005 to 2015 [24]. They established a solid connection between the bulk of the measures and sustainable development, emphasising the telecom industry's role to the attainment of the SDGs. The influence of fixed broadband on the economies of South Asia was demonstrated to be statistically insignificant.

According to their findings, one possible cause is the region's low purchasing power, which makes it challenging for inhabitants to pay their monthly internet expenses. Similarly, Ericsson and the Earth Institute (2017) stated that the telecommunications industry, including mobile broadband, will serve as the SDGs' fundamental infrastructural base. They identify a handful of basic occurrence modes. Here are numerous examples: I accelerate the scaling of essential services in the fields of health, education, finance, smart agriculture, and low-carbon energy systems; (ii) reduce deployment costs while focusing on urban and rural realities; (iii) increase public awareness and engagement; (iv) foster innovation, connectivity, productivity, and efficiency across many sectors; and (v) expedite improvements in service quality and employment opportunities [11].

Emerging nations will have several chances as a result of the digital economy's fast expansion. The effects of the digital transformation are characterised by technical innovation and preparation, as well as the formulation and implementation of policies. However, impoverished nations have several obstacles, such as a lack of resources to build an IT infrastructure and digital environment. A productivity conundrum may also result from the digital transition. Productivity gains would not be realised if digital technology were still in the installation phase, which is fuelled by the development of new infrastructure and more efficient processes. Growth only occurs during the deployment phase, when a new paradigm is widely disseminated and adopted throughout organisations, allowing it to realise its full economic and corporate growth, productivity, and profitability potential [25]. Consequently, developing nations must seek to overcome present capacity restrictions and foster the expansion of the digital economy. Investment in digital infrastructure is a vital requirement for the growth of the digital economy.

B. HOW TELECOMMUNICATIONS LINKED WITH SUSTAINABLE DEVELOPMENT GOALS

According to the 2019 UN Report, this is particularly true for economies with little or inadequate service infrastructure. Micro-banking and micro-energy networks are but two of the many new possibilities and services that digitalization may provide. "Leave no one behind" is the central premise of Agenda 2030, and mobile technologies are essential for connection and Internet access. The Sustainable Development Goals must be attained, and universal access to information is unanimously acknowledged as essential [35].

According to Bertini (2020), the digital revolution has a tremendous impact on people's lives and business operations in both the nonprofit and for-profit sectors. Essentially, the drive for quick economic expansion has led to an alarming rate of resource exploitation, with technical advances at the forefront of these efforts [4]. According to their analysis (Sachs et al., 2016), the role of ICTs in SDG implementation would increase gradually and rapidly between 2016 and 2030 as a result of digitalization and the incorporation of SDGs related to policy effectiveness. A number of obstacles hamper the efficacy of the SDGs' implementation. One of them is the absence of digital infrastructure and digital technology for public sector managers and policymakers [29].

Berning researched the Chinese MNE Huawei's Sustainable Development Goals (SDGs) activities and the role of multinational companies (MNCs) in attaining sustainability (2019) [3]. The findings suggest that Huawei can contribute to global sustainable development in three areas: goods and services, business operations, and social activities. Furthermore, a methodological framework was created to aid in demonstrating prospective MNC sustainability activities and related key stakeholders. This study is useful for both academics and professionals since it shows how sustainability and corporate success may coexist, as well as how MNCs can assist sustainable development. According to Huawei (2017), the SDGs' ICT process was not given enough thought when they were written. As a result, precisely measuring the digitization process is challenging. Regulations that prohibit the use and implementation of ICT when public administrators are entrusted with administering information systems, as well as the enhancement of knowledge and skills among them, are among the obstacles. Furthermore, the internet is rapidly increasing, and the telecommunications business is transforming. Numerous challenges have arisen as a result of the

public sector's digitalization, particularly in relation to the SDGs. largely because it is difficult to comprehend how the SDGs and digitalization are interconnected [18].

Ojutkangas et al. (2020) examined the mobile communications community as a significant contributor to the study's goals [28]. However, it appeared that understanding of the possibilities and variety was fairly restricted. Van Zanten and Van Tulder (2018) emphasised the enabling and empowering role of the telecommunications industry, which is expressly addressed in SDGs 4, 5, 9, and 17. On the other hand, SDGs 8 and 12 were put on the list of SDGs aimed to address the need for sustainable ICT [37]. According to Wu et al. (2018), telecommunications are essential for achieving all 17 SDGs [39]. They also emphasise the need to focus on the less apparent SDGs 5, 10, and 16. According to Matinmikko-Blue et al. (2020), mobile communications can be used as a communication infrastructure to promote local economic growth in underdeveloped areas, reduce barriers to accessing financial resources by enabling mobile money and microloans, and create employment opportunities for those living in abject poverty. In addition, mobile learning has the potential to usher in a digital learning revolution by enabling students to access learning resources from any location and at any time. Teachers may also utilise mobile devices to educate students everything from reading and mathematics to interactive coaching [26].

Regarding the future, we are certain that the telecommunications industry will continue to play a vital role in reaching the SDGs. It is important to the success of several solutions. Mobile network technologies such as 3G, 4G, and now 5G, as mentioned in this article, all play a role in facilitating global access to technology and applications. The higher the availability of wireless infrastructure and mobile coverage, the greater the likelihood that entrepreneurs will be able to design and produce applications with a good social impact. Investing in digital infrastructure should be a worldwide priority; telecommunications should be designated as a basic infrastructure necessity alongside energy and water. Better access to physical and virtual digital infrastructure will enable societies and communities to realise potential economic, environmental, and social benefits, as well as enable individuals to use technology and applications more efficiently and effectively. Access to connection necessitates the development of critical facilities; hence, investments in digital infrastructure will influence the success of a number of SDGs. All of us in the telecommunications business must innovate and establish new models to make digital infrastructure more inexpensive, accessible, discoverable, and deployable.

The current study explores the digitalization of the telecommunications industry and how the Sustainable Development Goals (SDGs) have been implemented into public administration in order to better comprehend the situation in Sri Lanka. To spread the word about the available information and stimulate the emergence of new businesses and knowledge, it is critical to consider closing the digital divide for individuals who have been left behind due to a variety of unavoidable circumstances. As a result, the researchers are interested in the industry's potential to contribute to Sri Lanka's long-term growth in terms of social, economic, and environmental sustainability.

C. THREE PILLARS OF SUSTAINABILITY AND INTERCONNECTIONS OF THE 17 GOALS

In 2010, Kang, Ryu, and Kim looked at three sustainability pillars, and from the ensuing four (at the point of overlap), they deduced connected sustainability domains (Figure 1) [20]. Furthermore, all seven of these domains have been considered. This methodology was created specifically for the telecommunications sector to assess the sustainability management of the Korean telecommunications sector using data from two mobile telecommunications providers.

Figure 1. Three Sustainability Pillars [20].

According to the UN, each goal connects the three sectors of economy, environment, and society, and their integration is critical for ensuring that the objective of the new agenda is recognised [19]. The previously straightforward notion of sustainable development (SD), with its three Agenda 21 pillars, has become more complex. Figure 2 illustrates the UN's new vision as a multi-dimensional framework of Sustainable Development Goals (SDGs) that covers the three SD pillars. While the United Nations General Assembly has proposed the agenda 2015–2030, a modern technique that integrates each of the 17 goals into the economy, environment, and society and whose combined nature is critical in ensuring that the new agenda's purpose is realised [7].

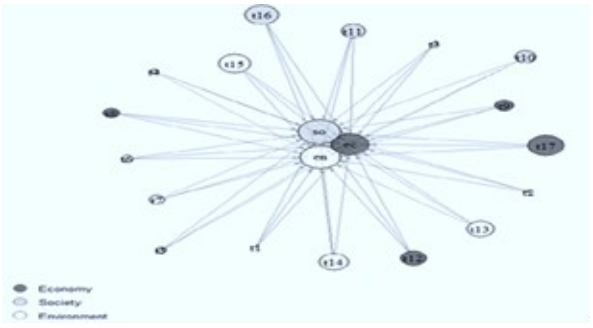

Figure 2. Multi-dimensional Framework of SDGs [7].

The three-pillar Venn diagram for sustainable development (SD) has been expanded to 17 objectives in three dimensions with a new design. Although Brundtland Venn diagrams and other pillar-based graphics lack the new visual's simplicity and power [1], their adoption by stakeholders is more difficult and complicated, putting their usefulness at risk [17].

Many theoretical models seek to distinguish between the concept of SD and its definition; yet, in such a challenging and ill-defined field, the Venn diagram consistently offered a clear, succinct, and forceful message [1]. Radar charts have also been used to highlight the link between the SD's three pillars and aims [22]. The Sustainable Development Goals (SDGs) cannot, however, be effective at the national level; rather, recognising a region's particular traits and doing studies on its population may result in better outcomes.

Singh et al. (2022) assert that educational quality is essential for a nation's economic success. because it expands one's and others' perspectives [32]. Education and training improve the lives of individuals and society, therefore contributing to the attainment of SDG 1: the eradication of poverty. The foundation of economic progress is education and training. Education has economic and social advantages. Education increases the value and efficiency of the labour of the poor (SDG 1: no poverty and SDG 2: no hunger). Education and training contribute to economic and social progress, as well as to income distribution. Only through education can poor nations improve their economic and

social well-being. Education for women enhances female labour force participation and gender equality (SDG 5: gender equality). It enhances productivity, creativity, free enterprise, and technological advancement (SDG 9: industrialization and innovation). Through education, employee productivity and reason are enhanced. It enhances a nation's competitiveness in global markets and production that are rapidly changing. Human capital is vital for economic growth over the long run. By enhancing social and physical capital, education and training minimise social inequality and stimulate economic expansion (SDG 10: reduced inequalities). In the current study, the researchers will thus focus on how the contributions provided to SDGs by the telecommunications industry impact Sri Lanka's sustainable development goals. Furthermore, the researcher is interested in the impact of these contributions on the social, economic, and environmental pillars of sustainability, specifically SDG 1 (poverty) and SDG 4 (education).

D. PROPOSED CONCEPTUAL FRAMEWORK

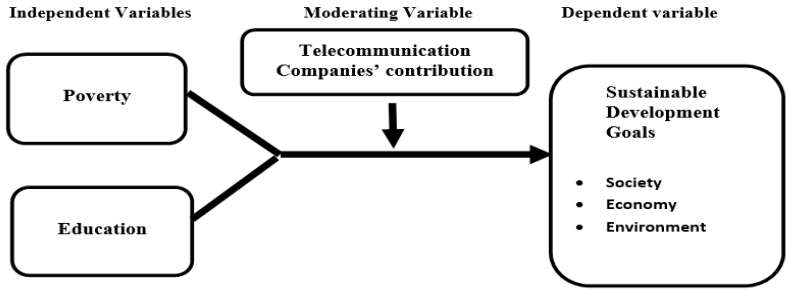

Figure 3. Proposed Conceptual framework

According to the literature assessment, the aforementioned essential practises have an individual influence on sustainable development and its aims. As a result, the conceptual framework was created based on a survey of the literature (Figure 3).

This study's independent variables (IV) include poverty (IV1) and education (IV2), which are taken from SDGs 01 and 04 out of 17 SDGs. The Sustainable Development Goals (SDG) are the dependent variable (DV), and they are linked to the three pillars of sustainable development: society, economy, and environment. In this concept, the contribution of the telecommunications industry functions as a moderating variable (MV). As a result, it has a significant contingent influence on the link between independent and dependent variables. It changes the original connection between the independent and dependent variables in that it holds true for certain sample categories but not for others. Researchers will now be provided with hypotheses for future research using this proposed framework (Figure 4).

E. PROPOSED RESEARCH HYPOTHESIS

H1a- Poverty (IV1) has influence on SDG (DV1)

H1b- Telecommunication companies' contribution (MV1) has a moderating effect on the relationship between Poverty (IV1) and SDG (DV1)

H2a- Education (IV2) has influence on SDG (DV1)

H2b- Telecommunication companies' contribution (MV1) has a moderating effect on the relationship between Education (IV2) and SDG (DV1).

H3a-Poverty and education (IV1+ IV2) have influence on SGD (DV1)

H3b- Telecommunication companies' contribution (MV1) has a moderating effect on the relationship between Poverty and Education (IV1+IV2) and SDG (DV1).

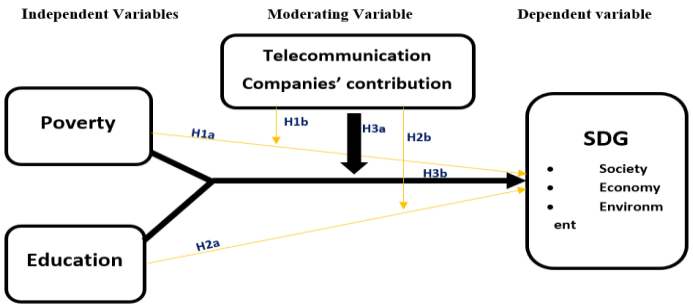

Figure 4. Proposed Research Hypothesis

III. RESEARCH METHODOLOGY

Using a scientific research approach, this study will assess the cause-and-effect relationship between the independent factors and the dependent variable. This study will use a positivist approach [30]. The research technique would be deductive since the researcher aims to draw conclusions based on the hypotheses generated on the questionnaire as part of the quantitative research procedure [31]. The primary mode of data collection will be quantitative [27]. The probability convenience sampling approach is the major topic of the study. Since, the inquiry includes specific categories, the researcher intends to utilise basic random selection as a sample approach. A sample of 384 people will be used to generalise the research findings into two groups. The sample size in the future investigation will be determined using the 95 percent confidence level and 5% estimated error estimate from the Krejci and Morgan (1970) study [23]. The researcher will distribute 400 surveys and select the most reliable ones. In the current study, only 70 respondents were chosen as a preliminary sample. Since the study on educational programmes and poverty reduction focused on college professors and students (at the advanced, undergraduate, and postgraduate levels), As part of the preliminary study, executives with more than ten years of experience in the telecommunications business and academics with a doctorate degree in socioeconomics will be interviewed. A statistical analysis application was also employed to analyse the data.

The current research questioner was constructed as a preliminary investigation, with forty questions utilising a six-point Likert scale to quantify the variables using characteristics defined in earlier studies. The first six questions were designed to assess the first independent variable (poverty) using the categories income, necessities, availability, affordability, knowledge, and employability [8];[27]. The second independent variable (education) was measured using skills, support, capacity, access, assistance, and quality [16]. [5] Another ten questions were prepared for the moderating variable (telecommunications companies' contributions), which were measured using dimensions such as affordable data packages, employment opportunities, useful programmes, collaborations with schools, educational necessities, poverty reduction, and the facilitation of providing quality education [14],[2],[36]. The dependent variable (Sustainable Development Goals) was measured using ten questions based on the domain's society, environment, and economy [34],[7].

IV. RESULTS AND DISCUSSIONS

In order to arrive at conclusions, the researcher uses descriptive analysis to *synthesize* the data, which includes graphs, charts, and tables that outline the responses gathered. The structured questionnaire data collected was quantitatively evaluated using SPPS 25 and Microsoft Word and Excel software.

In the current study, a sample of 70 respondents (50 students and 20 teachers) were chosen to complete the pre-research questionnaire. To acquire reliable replies, the researcher randomly disseminated a structured questionnaire

using Google Forms to students over the age of 18 studying in high school, as undergraduates, and as postgraduates. Also, both public and private school teachers Due to a lack of experience, the researcher omitted teachers who had not worked for more than 1-2 years.

A. FACTOR ANALYSIS.

In this study, all variables are greater than 0.5 have met the minimum requirements of the reliability (Table 1). The validity results of the Bartlett's test of Sphericity indicate that all the factors are significant at 0.000, which is less than 0.05 (Table 2). Also, the correlation shows that all the variables have correlated with the dependent variable with the significant level 0.000 which is less than 0.05(Table 3). Therefore, based on these results, the factor analysis is appropriate.

Table 1. Reliability of The Study

Reliability	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Poverty	0.840	0.842	6
Education	0.753	0.775	6
Telecommunication companies' contributions	0.939	0.940	10
Sustainable development goal	0.969	0.969	17

Table 2. Validity of the study

Validity	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	Bartlett's Test of Sphericity		
		Approx. Chi-Square	df	Sig.
Poverty	0.757	164.688	15	.000
Education	0.723	130.337	15	.000
Telecommunication companies' contributions	0.855	486.040	45	.000
Sustainable development goal	0.910	1394.541	136	.000

Table 3. Pearson's correlation of the study

Variable	Poverty	Education	Telecommunication Contribution	SDG
Poverty	1			
Education	.664	1		
Telecommunication contribution	.238		1	
SDG	.322	.436	.567	1
Sig.(2-tailed)	.000	.000	.000	.000

B. FINDINGS

The researchers performed an EPA (Expletory Factor Analysis), and the Kaiser-Meyer-Olkin MSA was 0.818 as a consequence of this analysis. The four dimensions explained 69.692% of the variation among the study's items. The Bartlett's test of sphericity was significant, with all communalities exceeding the necessary value of 0.50. According to R square, the present research parameters explain 19.2% (0.192). Poverty and education accounted for 19.2% of the overall variables influencing sustainable development objectives. The questionnaire and research model sub-elements account for 19.2% of the total, with the remaining 80.8% influenced by factors not included in the model or questionnaire because this is a preliminary study. According to the correlation study, one independent variable (education) has a higher influence on the Sustainable Development Goals, while the other variable (poverty) has a smaller impact on the Sustainable Development Goals. As a result of the preliminary study results obtained in the current study, the researcher concluded that poverty has no direct impact on sustainable development goals and that increasing contributions to education can help to eradicate poverty and achieve the sustainable development goals in Sri Lanka.

V. CONCLUSION

The researchers investigated the influence of the telecommunications industry on Sri Lanka's sustainable development goals in this study. The COVID-19 epidemic has had a particularly negative influence on the social and economic spheres in low- and moderate-income developing nations such as Sri Lanka. The SDG objectives of those nations cannot be met on their own and require mutual cooperation and partnership. Furthermore, COVID-19 had a negative impact on the sectors that contributed the most to the economy and jobs in Sri Lanka, such as export industries and the garment industry. In this sense, the telecommunications industry is critical to a country. It not only contributes to economic progress, but it also serves as a crucial platform for long-term development by providing new solutions to environmental and social concerns.

The researchers discovered a link between the SDGs and the three pillars (social, economic, and environmental), which have been widely debated. The findings from the literature were used to build the conceptual framework proposed in this study. Based on the literature review, the researchers discovered a research gap in this study. It was discovered that there is a paucity of studies in Sri Lanka under the Sustainable Development Goals on how the telecommunications industry helps in this respect.

ACKNOWLEDGEMENT

S. K. Chama Ruklani Wickramasinghe expresses her sincere gratitude to School of Business at Malaysia University of Science and Technology for the guidance provided throughout the work. The author(s) received no financial support for the research, authorship, and/or publication of this article.

REFERENCES

[1] F. Ali-Toudert and L. Ji, "Modeling and measuring urban sustainability in multi-criteria-based systems – a challenging issue", Ecological Indicators, vol. 73, pp. 597–611, 2017. doi: 10.1016/j.ecolind.2016.09.046.

[2] I.Bello and M. Othman, "Multinational corporations and sustainable development goals: Examining Etisalat Telecommunication intervention in Nigeria's basic education", International Journal of Educational Management, pp.1-16, 2019. doi:10.1108/IJEM-03-2019-0103.

[3] S. Berning, "The Role of Multinational Enterprises in Achieving Sustainable Development - The Case of Huawei". European Journal of Sustainable Development, vol. 8, no. 3, pp.194-202, 2019. doi: 10.14207/ejsd.2019.v8n3p194.

[4] B. Bertani, M. Raberto, and A. Teglio, "The productivity and unemployment effects of the digital transformation: An empirical and modelling assessment", Review of Evolutionary Political Economy, vol. 1, no. 3, pp. 329-355, 2020. doi: 10.1007/s43253-020-00022-3.

[5] S. Bukhari, R. Kalim, A. Norman, and M. Hassan, "Prevailing Poverty in SAARC Countries: Can Education Help?", Asia-Pacific Social Science Review, vol. 21, no. 1, pp. 156-171, 2020. doi: 10.59588/2350-8329.1357.

[6] Country Commercial guide, Sri Lanka Telecommunication and information Technology. International Trade Administration Trade.gov. https://www.trade.gov/country-commercial-guides/sri-lanka-telecommunications-and-information-technology ,2021.

[7] E.S. Dalampira and S. Nastis, "Back to the future: simplifying Sustainable Development Goals based on three pillars of sustainability", International Journal of Sustainable Agricultural Management and Informatics. vol. 6, no. 3, pp. 226 – 240, 2020. doi: 10.1504/IJSAMI.2020.10034327.

[8] R. Deyshrappria, "Globalization–poverty nexuses: Evidence from cross-country analysis", Empirical Economic Review,vol. 1,no. 1,pp. 24–48, 2018 .

[9] Donaires, L.O. Cezarino, A.C.F Caldana, L. Liboni, "Sustainable development goals – an analysis of outcomes', Educational and Psychological Measurement", 30: pp.607-610, 2019.

[10] D.B. Dwiputriane, and S.H. Heng, "Authentication for 5G Mobile Wireless Networks", Journal of Engineering Technology and Applied Physics". vol. 4, no. 1, pp. 16-24 ,2022. doi: 10.33093/jetap.2022.4.1.3.

[11] Ericsson and Earth Institute. "ICT Accelerates Action on the Sustainable Development Goals". https://www.ericsson.Com ,2017.

[12] GSMA Mobile industry impact report: Sustainable Development Goals. https://www.gsma.com/betterfuture/wpcon ,2016.

[13] GSMA Mobile industry impact report: Sustainable Development Goals. https://www.gsma.com/betterfuture/wpcon ,2018.

[14] GSMA Mobile industry impact report: Sustainable Development Goals. https://www.gsma.com/betterfuture/wpcon, 2020.

[15] GSMA Mobile industry impact report: Sustainable Development Goals. https://www.gsma.com/betterfuture/wpcon ,2021.

[16] M.S. Hassan, S. Bukhari and N. Arshed, "Competitiveness, governance and globalization: What matters for poverty alleviation?" Environment, Development and Sustainability, vol. 22, no. 4, pp.3491–3518, 2020. doi: 10.1007/s10668-019-00355-y.

[17] Y. Huan, H. Li, and T. Liang, "A New Method for the Quantitative Assessment of Sustainable Development Goals (SDGs) and a Case Study on Central Asia", Sustainability, vol. 11, no. 13, 3504 ,2019. doi: 10.3390/su11133504.

[18] Huawei Report: "The Role of ICT in realizing education for all by 2030", Huawei and CSR-Asia, pp. 1-46, 2017.

[19] A. Jacob, "Mind the gap: analysing the impact of data gap in millennium development goals' (MDGs) indicators on the progress toward MDGs", World Development, vol. 93, pp. 260–278 , 2017. doi: 10.1016/j.worlddev.2016.12.016.

[20] Y. Kang, M.H. Ryu and S. Kim, "Exploring sustainability management for telecommunications services: A case study of two Korean companies", Journal of World Business, vol. 45, no. 4, pp. 415-421 ,2010. doi: 10.1016/j.jwb.2009.08.003.

[21] Kearney. "The Kearney Global Services Location Index, Digital resonance: the new factor influencing location attractiveness", pp. 1-19, 2019.

[22] O. Kostoska, and L. Kocarev, "A novel ICT framework for sustainable development goals", Sustainability, vol. 11, no. 7, pp. 19-61, 2019. doi: 10.3390/su11071961.

[23] R. V. Krejcie., and D. W. Morgan,"Determining Sample Size for Research Activities", Educational and Psychological Measurement, vol. 30, no. 3,pp. 607-610, 1970. doi: 10.1177/001316447003000308.

[24] Z. Latif, W. Xin, D. Khan, K. Iqbal, Z.H. Pathan, S. Salam, N. Jan, "ICT and Sustainable Development in South Asian Countries", Human Systems Management, vol. 36, no. 4. pp. 353–62, 2017.

[25] H.V. Le, T.H. Long, and D. Park, "Digital Divide decoded: Can e-commerce and remote workforces enhance enterprise resilience in the COVID-19 ERA?", Asian Development Bank, no. 667, 2022. doi: 10.2139/ssrn.4192169.

[26] M. Matinmikko-Blue, Yrjölä and P. Ahokangas, "Spectrum Management in the 6G Era: The Role of Regulation and Spectrum Sharing", 6G Wireless Summit (6G SUMMIT), pp.1-5, 2020. doi: 10.1109/6GSUMMIT49458.2020.9083851.

[27] K. Munir, and A. Kanwal, "Impact of educational and gender inequality on income and income inequality in South Asian countries", International Journal of Social Economics, vol. 47, no. 8, pp. 1043–1062, 2020. doi: 10.1108/IJSE-04-2020-0226.

[28] K. Ojutkangas, E. Rossi, S. Aalto, and M. Matinmikko-Blue, "Linking Mobile Communications with the United Nations Sustainable Development Goals: Mapping Process", International Telecommunications Society (ITS) Online Event, pp. 14-17, 2020.

[29] J. Sachs, V. Modi, H. Figueroa, M. Fantacchiotti, K. Sanyal, and F. Khatun, "ICT & SDGs: How information and communications technology can accelerate action on the sustainable development goals", The Earth Institute, Columbia University, pp. 1-108, 2016.

[30] M. Saunders, P. Lewis. and A. Thornhill, "Research Methods for Business Students". Harlow: Pearson.1-872, 2019.

[31] Silverman, "Doing Qualitative Research: A practical handbook", London Sage, 2013.

[32] H.P. Singh, A. Singh, F. Alam, and V. Agrawal, "Impact of sustainable development goals on economic growth in Saudi Arabia: Role of Education and training", Sustainability, vo. 14, no. 21, 14119, 2022. https://doi.org/10.3390/su142114119

[33] C. Susaie, C.K. Tan, and P.Y. Goh, "Learning experience with learnwithEmma", Journal of Informatics and Web Engineering, vol. 1, no. 2, pp. 30-44, 2022. Available at: https://journals.mmupress.com/index.php/jiwe/article/view/392.

[34] P.B. Thompson, "The spirit of the soil: agriculture and environmental ethics", Routledge, New York, 2017.

[35] UN Report. Unstats.un.org, 2019. https://unstats.un.org/sdgs/report/2019/The-Sustainable-Development-Goals-Report-2019.pdf.

[36] N. Urama, and M. Oduh, "Impact of Developments in Telecommunications on Poverty in Nigeria", Journal of Economics and Sustainable Development, vol. 3, no. 6, pp.25-35, 2012, doi: 10.2139/ssrn.2171082.

[37] J.A. Van Zanten, and R. Van Tulder, "Multinational enterprises and the Sustainable Development Goals: An institutional approach to corporate engagement". Journal of International Business Policy, vol. 1, no. 3, pp. 208–233, 2018, doi: 10.1057/s42214-018-0008-x.

[38] World Bank, 2020. https://documents1.worldbank.org/curated/en/816941596101473510/pdf/COVID-19-s-Impact-on-the-Global-Telecommunications-Industry.pdf.
[39] J. Wu, S. Guo, Huang, W. Liu, and Y. Xiang, "Information and communications technologies for sustainable development goals: state-of-the-art, needs and perspectives", IEEE Communications Surveys and Tutorials, vol. 20, no. 3, pp. 2389-2406, 2018. doi: 10.1109/COMST.2018.2812301.
[40] A. Zaballos, E. Iglesias, and A. Adamowicz, "The Impact of Digital Infrastructure on the Sustainable Development Goals. A Study for Selected Latin American and Caribbean Countries", pp. 1-10, 2019.