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Economics of Early Childhood Education without Universal Benchmarks: A Case Study of Gampaha District, Sri Lanka

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Abstract

The study is conducted to identify the economics of early childhood education (ECE) without universal benchmarks (UB). An empirical study has been conducted in the Gampaha District of Sri Lanka. If this study helps to understand the need for ECE and how to implement it in accordance with UB, only then will it be able to effectively contribute to the country's economic growth by making citizens more productive by molding them from childhood on. The objective of the research is to investigate the long-term economic consequences of providing ECE without UB and indicate to government parties the consequences faced due to the lack of UB in ECE. Data is collected through a survey questionnaire distributed to 384 laborers between the ages of 19 and 35. Snowball sampling, under the non-probability sampling method, is used to gather participants. The results showed that improper ECE affected the cognitive development, emotional and social behavior, physical and health development, and literacy and language skills of the individuals when they reached adulthood. There is a 0.664 significant correlation between cognitive development and ECE, whereas the results indicated the impact of ECE on cognitive development is 90%. As a result, national-level early childhood development policies must be developed with policy frameworks and strategies to fill service gaps, such as developing a culturally appropriate ECE program for the entire country. These need to be implemented by the government to standardize ECE and generate an economically productive labor force.

Keywords: Early Childhood Education, Universal Benchmarks, Economic Effects, Performance, Productivity

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Introduction

Sri Lanka has remained a developing country over centuries but was able to maintain the literacy level at 96.3% by 2018 (SLLR, 2020). According to a study conducted by Coulombe (2014), as identified educational attainment, literacy skills, and economic growth have an interconnection where such investments in raising the average level of skills could yield large economic returns. Researchers have compared adult literacy and life skills in six countries and identified that education and literacy provide positive outcomes in the labor force and social behavior. However, many local researchers identify the impact of education on economic development by only analyzing primary, secondary, or tertiary education (Loening, 2005). Early Childhood Education (ECE)[2] benefits and needs have been neglected by many researchers in Sri Lanka due to a lack of priority given by the government, and still there is no proper syllabus for the overall country to follow (Kodithuwakku, 2018).

There are many private and international early childhood educational centers (ECECs)[3] that have been evolving, but the government still has a higher number of centers under its control, where the standards of such centers are questionable when compared with those in the private sector (Dammika, 2015). According to the United Nations International Children's Emergency Fund (UNICEF), there is a "learning crisis" caused by the lack of holistic education provided by the developing countries, and they face the challenge of preparing the children for adolescence to have a productive life, work, and active citizenship; Sri Lanka has also been placed in this category (Gunawardena, 2020). It is also identified that, as a long-term benefit of ECE, it provides economic growth between 1.3% and 3.5%. Thus, it has a highly significant effect on the cognitive development and social development of an individual at their later life (Arteaga, 2016).

ECE is considered the educational program, which serves the preschool years of the children and consists of various activities that are especially designed for children between the ages of 2 and 5. The main focus of those activities is to develop the cognitive and social aspects of the children before they enter primary school and for later life (Jessica, 2019). However, according to Dr. Thalagala, ECE focuses on developing cognitive, social, and emotional behavior, language and literary skills, physical and mental health, and communication (Thalagala, 2017). Government ECEC enrolls children from age 3 upwards, but private

[2] ECE: Early Childhood Education
[3] ECEC: Early Childhood Educational Centers

centers enroll children from age 2 upwards (Sundin, 2019). Although, through educational reforms in 1972, ECE centers were legalized for the first time, there was no specific consideration given to raising the standards of ECE in Sri Lanka until 2011. A syllabus for the Western Province was developed by Mahinda Chinthanaya (2011-2016), and the ECE centers followed their own style of ECE activities until 2013 (Upul, 2019). But by 2015, only an accurate syllabus with all the activities demonstrated had been presented to the government-registered ECE centers. There is no specific syllabus for the whole country, but the syllabuses differ from district to district because the 2015 syllabus was created by the government only for the Western Province (Premalal, 2018).

There are several types of ECE curricula followed in Sri Lanka, such as the Maria Montessori method, Head-Start ECE program, Waldorf ECE program, and Modern Montessori Method program. The Sri Lankan government primarily follows the Waldorf ECE program, and as a result, the government provides the necessary equipment for ECE centers to perform the necessary tasks and activities (Upul, 2019). In addition, annually, a government representative visits these centers to identify which equipment needs to be given and how well the teachers are performing. While the government syllabus develops social and emotional behavior with physical, health, and cognitive development, the private section includes literacy and language arts additionally since the United Nations Educational, Scientific, and Cultural Organization (UNESCO)[4] provides the Universal Benchmarks (UB)[5] for the whole world in ECE. In this regard, it has been identified that the Sri Lankan government ECEC delays writing due to Piaget's preoperational stage, which enforces writing at the age of 5 (Cherry, 2020).

Education economics, or the economics of education, is a wide area of study that includes the issues related to education from the perspective of economics (Francis, 2017). They include the provision of education, the financing of education, and the demand for education (Neilson, 2013). Therefore, the author addresses the key factors that relate to benchmarking the economic education in Sri Lanka in early childhood as education interventions of economic analysis, ECE-based management, expenditures and finance in ECE, impact evaluation, government partnership in education, and quality of Sri Lankan ECE (World Bank, 2015). It is being identified by Dr. Heckman in his research with the Perry Preschool, where he

[4] UNESCO: United Nations Educational, Scientific, and Cultural Organization
[5] UB: Universal Benchmarks

provides standard ECE for all the disadvantage children in African countries, along with proper education to the mothers on how they could make their children healthy. Also, his main goal was to identify, by providing such elements, how they would affect economic growth. The results showed in 2012 that there is an economic growth yield of between 7% and 10% by investing one United States dollar in ECE, increasing the health conditions of the citizens, the social outcome, the economy, and decreasing the criminal justice system expenditure (Heckman, 2012).

Under the global empirical studies, only Heckman has conducted studies in relation to ECE and economics, but such have not focused on UB. Barnett (2018) has also conducted studies on ECE programs and their long-term economic consequences but has not focused on the UB. Then in Sri Lanka, no research was conducted with regards to ECE or economics. Therefore, there is an empirical gap. Furthermore, no specific conceptual framework or theoretical model in ECE and economics has been developed by previous researchers. Therefore, a theoretical gap has also been identified.

Since no other researcher has conducted research on this area in Sri Lanka, this study focuses on the economics of ECE without UB in the Gampaha District. This is where the researcher would be able to identify the necessity of providing standard ECE for the children to make them productive at adulthood, so they will be able to perform well in accelerating the economic growth of the country.

The main questions that this study addresses include: 1) What are the long-term economic implications of providing education without ECE? 2) What are the long-term economic implications of conducting ECE without universal benchmarks? 3) What are the long-term economic consequences and effects of providing ECE without universal benchmarks? 4) What are the universal benchmarks of ECE and their long-term economic implications? 5) What are or were the gaps in the ECE in Sri Lanka? And 6) What are the long-term economic implications of ECE gaps?

Literature Review

Economics of Education

Education is also viewed as a means of gaining the ideas, skills, and knowledge effectively and efficiently to build the economy through productivity. Education economics is the study of

identifying the issues related to demand for education, financing, provision of education, and the efficiency of educational programs and policies (Radcliffe, 2020). The four pillars of educational economics for a country's growth are the business environment, changing information technology, human resources, and effective use of the latest trends. Therefore, economic performance depends on how a country's workforce is efficient through education and training. Such factors create competitive advantages in the global market.

Economics of ECE

The study of economic benefits and issues related to providing ECE and facilities for young children includes the direct lifetime productivity gains by working mothers and the indirect earnings increments of the recipients of these social services in order to boost early abilities and achievements (Psacharopoulos, 1994). According to Halow's (1975) concept, there are 3 levels, such as survival (getting through time and space without disturbing), adjustment (being less open to predictability), and encouragement (for the greatest maturity). He named them "rational patterns", which help to understand the mistaken behavior at early childhood schools. During a child's age range of 3 to 5, the memory muscles develop with the cerebral cortex, which is the muscle that controls the brain power and the synapses cells along with the pathways (Ministry of Child Development, 2015). To develop such abilities, the child must participate in developmental activities that send signals to the brain, indicating that the child's absorbent mind is activated. If this has been neglected, the child's brain power will not be able to reach its full potential later in life or through better education.

There is a desire to accelerate the learning of young children, and there are fears that the private childcare arrangements of even well-off working parents underinvest in learning and development. Programs arising from interest in child welfare and maternal employment have tended to provide full-day services called "childcare". Programmes arising from an interest in human capital investment have tended to be part-day and be called "ECE". The characteristics of the children involved and their families, the characteristics of the programs, and the characteristics of the social context depend on ECE cost (Pinera, 1981). Also, ECE has not demonstrated success in permanently raising Intelligence Quotient (IQ) scores. Extensive follow-up of groups in an empirical study until age 19 revealed a pattern of effects that began with increased IQ scores. The experimental group's IQ advantage began to decline after school entry and ceased to be statistically significant by age 7 (Selowsky, 1976). Through the Perry ECE Program, benefits were estimated for: childcare provided, public school cost savings,

reduced crime costs, increased earnings, and reduced public welfare costs. Mother's labor force participation did not appear to increase, and the value of childcare is a negligible contribution to benefits in this case. This indicated that ECE for poor children can be a sound economic investment for society as a whole based on the benefits to children alone. Also, less developed countries appear to over allocate resources to higher levels, especially ECE, as empirical evidence suggests that the contribution of primary and secondary schooling to earnings is an increasing function of the level of ECE ability. ECE ability would appear to increase earnings by increasing the productivity of a given number of years of schooling obtained. There is an interaction between nutrition, health, and education in ECEC (McKay, 1983).

Education and Human Capital

Economists use the term "investment" to refer to expenditure on assets that will produce income in the future and contrast investment expenditure with consumption. This produces immediate satisfaction or benefits, but does not create future income (Schultz, 1961). Adam Smith pointed out that "education helped to increase the productive capacity of workers, in the same way as the purchase of new machinery or other forms of physical capital increased the productive capacity of a factory or other enterprise. Thus, an analogy was drawn between investment in physical capital and investment in human capital" (Brady, 2019). When they were comparing years to years, the rate of return on education in the first year and the final year was higher than in the intervening years.

ECE and Psychology

"Education is the most powerful weapon that you can use to change the world" (Mandela, 1995). Education helps to make permanent changes in behavior through cognitive function, which is invisible since mental development is involved, and physical function, which is visible since personal, social, professional, and spiritual development are involved. Education makes nobody into somebody, makes a person competent, and moves a person from a person to a professional. Educated people therefore change and become competent, wise, visionary, and leaders through knowledge, skills, attitude, aptitude, and values by using their mind-set. Brain development in a child is done physically by talking and moving, and cognitive development is done mentally. Since highest cognitive functions are at the age of 4, the child should be given all the basic knowledge and gross and fine motor skills because if the developing brain cells are not pruned at that time, they will be destroyed automatically, and the growing child will have defects in some areas of development. Its "use it or lose it"

concept of brain neurons, which play a major role in developing an adult through ECE, means that when the person becomes an adult, they can perform more complex tasks easily. Positive education provides skills and happiness for later adulthood (Spinath, 2006).

Raven's Colored Progressive Matrices Test

This is visual-spatial reasoning and problem-solving task in which children need to derive a set of rules or relations between stimuli in order to complete a visual pattern. "These aspects of fluid cognition are related and developed over time in an attempt to determine more precisely the performance of young children for short-term storage and cognitive control." (Raven, 1986). As Harden (2010) explains, a 2-year-old child can remember events that occurred several weeks or months ago and has the capacity of storing verbal memories for a substantial period of time where such memories could be used for later events.

Education and Productivity

On the other hand, some countries do not provide equal education opportunities for women, which has a direct effect on increasing productivity. In rural areas, women make decisions about the use of family resources and the marketing of farm products. Success means learning the skills that the school requires the child to learn or completing a particular level of schooling. The very fact of "success" in school symbolizes social approval (Carnoy, 1990). According to Metcalf (1985), "productivity measures are difficult to obtain, and any estimate of the relationship between education and productivity is beset by limitations. Individuals who have completed different levels or amounts of education are generally in different types of jobs, producing different outputs". For a variety of reasons, most economists have agreed on the fact that there is a positive relationship between the quality and quantity of an individual's education and job productivity, but proving it has been an elusive enterprise. Empirical studies of the self-employed in agriculture and informal labor markets show that there is a significant, albeit not especially large, effect in productivity from more schooling (Berry, 1980).

ECE and Labour Force Quality

The quality of the labor force depends on attitude, skills, and behavior. When considering the ECE and attitude, a person's decision-making depends on the environment and social influence. According to the stages of growth, a child's perception starts to grow when he or

she views the environment as a positive place to exploit. When the environment is bad, it affects the child through childhood and into adulthood and creates a negative attitude towards the environment. ECE creates the environment to develop social factors such as friendships, team building, and making assumptions about different personalities by distinguishing them according to their level of connection with the child (Weil, 2013). These attitudes have an impact on developing a proper work-life balance with colleagues and being productive in teams.

ECE and skills are about reducing selfishness and encouraging respect for everyone and their views. Such practices lead towards developing proper relationships with peers in adulthood and helping others when needed (Johnson, 2011). Educating others and assisting in the development of one's own skills by identifying what one is best at.

ECE and behavior are related through the teacher identifying the different behavioral styles of the children, such as crying since he/she has been hurt, smiling because you are happy, or getting annoyed because someone has hurt him/her. If the teacher does not get engaged in the matter constantly, the child starts to deviate from the other children and will not communicate about the problem. Such practices lead to adulthood, where communication and positive behavior are enforced at the workplace. If a person has bad behavior, he or she will not be able to be an employee for a longer time and might get engaged in criminal or illegal activities. Thus, proper communication style is taught at ECE centers where the children learn to use an appropriate communication style with elders at the workplace and even with superiors to win the hearts of everyone and be employed for a longer time (Johnson, 2011). Thus, such provides opportunities to grow at work or even helps to be employed in customer care, marketing, or sales.

ECE and Labor Market

Approaches towards the labor market are cognitive abilities toward higher earnings, income, and personality traits. Cognitive abilities that have been developed at ECE centers can lead to a change in the class background of an individual and enable them to be more educated in order to obtain a better occupation. Such an occupation relates to a better income level and developing the lifestyle of the individual. If the person is productive and has a positive personality, they can develop via ECE by laying the foundation early and becoming punctual, obedient, and respectful of authority. Thus, the educational expansion of an individual can

lead them towards a secondary labor market with low pay and poor working conditions, where these characteristics will not increase their earnings. Capitalist society is also related to the labor market, where occupational status and developing different personality traits are related to being included in the occupational structure. Since ECE serves as a screening tool for employers to select individuals who are better suited to small job roles (Willis, 1986).

Education, Occupation and Earnings

According to Psacharopoulos (1994), the body of literature that deals with this is often referred to as "alpha coefficient literature", whereas alpha (α) indicates the proportion of earnings that can be attributed to education alone. An α coefficient of 0.6 means that 60% of the earnings of a given person are attributed to her or his level of education. The economists have estimated the coefficient through multivariate regression analysis of the log of earnings on schooling and some proxy measures indicating the ability of the individual. Thus, earnings are described as a function of years of education, reasoning ability, cognitive achievement, and a linear and quadratic term in years of experience. Therefore, education, occupation, and earnings are interrelated.

Although the human capital interpretation of education and the signaling interpretation of education are proposed on different theoretical grounds, they have very similar implications for the rational choice of schooling. Schooling contributes only a very marginal part of earnings differentials. Other family backgrounds significantly contribute to the variation in earnings, and if people are properly identified and classified by using schooling and education as a signaling device, it may be socially productive because such sorting of people is likely to allocate both talented and untalented people to the most relevant positions in the market (Rosen, 1987). The simple earning function is:

$$Y = \alpha + \beta S + \gamma A + u$$

Where Y is income, S is education and A is a measure of ability. When ability is ignored, obtain a biased estimator of β as follows:

$$Ebys = \beta + \gamma \text{bAS} = \beta + \gamma \,\text{cov}\frac{AS}{Var\ A}$$

Where the return to education is estimated with a bias (Rosen, 1987). While Heckman (2017) has identified the independent variables as cognitive development, health and

physical development, language and literary development, and emotional and behavioral development. The study has indicated the dependent variable as economic development, while the Heckman (2017) study has identified ECE as a mediating variable between the child's development and economic development.

Long Term Effects of ECE

According to a study conducted by Barnett (2018), it has been identified that ECE programs provide long-term benefits in the areas of cognitive development, socialization, and school success. He conducted a survey with 150 students and reviewed 36 studies regarding the area, where he identified low-income families as benefiting more. Also, he mentioned that the quality of the ECE programs affects grade retention, social adjustment, school achievement, and special education.

But a study by Lynn (2005) identified that from age 19, these ECE effects a person drastically in the areas of intelligence quotient (IQ), growth of productivity, labor force participation, and demographic changes. IQ is related to criminality and welfare and is informally related to employment. Growth of productivity has effects on economic outputs such as capital, labor, energy, and services, as well as productivity indicators such as performance, employee engagement, and company culture. Demographic changes affect the employment-population ratio because of the quality and quantity of natural resources and the age structure, which influence employment growth. Labor force participation affects the size of the economy and its growth according to the number of workers available for industrialization. This industrialization affects the educational level, cognitive level, and productivity of the labor force.

Importance of Early Year's Education

A child's brain is not like a small adult's brain; it's more like a sponge. Their brain development is twice as fast as an adult's, and the brain is made out of billions of cells named neurons. These neurons grow rapidly, and the branches are interconnected with each other like a forest. A 2-year-old child's brain has twice as many connections as an adult's brain. Used branches develop, and the non-used branches are pruned away. That is why it's important during the early years to give many different types of stimulation. If these foundations are not given through ECE and connections are not made, it will affect learning, emotions, skills development, interaction, engagement development, and language development until

adulthood, where as adults they will not be able to perform well. The fine motor skills start to develop at age 4; therefore, writing should begin at that time (Wass, 2016). This is the main reason that benchmarks have been created for ECE curriculum in order to develop language, brain, emotional, ethical, and self-concept as mentioned by Dr. Wass to become an adult who has better learning skills for performance.

Importance of ECE on Human Resource Development

HRD is considered the framework that provides employees with help in developing their personal and organizational abilities, skills, and knowledge. Such include career development, employee training, performance management and development, mentoring, coaching, key employee identification, tuition assistance, succession planning, and organizational development. Therefore, developing human resources is developing society, wherefore a better educational foundation is needed because learning changes the way a person thinks (Heathfield, 2020).

Soft skills training is conducted in the ECE institutes, where the child learns gross motor skills and pincer movements. The foundation for such soft skills is provided through a better learning environment in which the teacher gathers the children in small groups and conducts small presentations, from teaching the child how to hold a pencil to teaching the child how to tie his/her shoelace.

According to Harrisburg (2007), improving the quality of ECE results in stringent engagement by students and teachers and an intensified focus on critical thinking and problem-solving skills where such motor skills are used for writing and eating in the future. Interpersonal communication is a must to carry on day-to-day activities with others. Children are being taught how to communicate with others with good manners at ECE institutes, where according to Cox (2008), adults' threaded discussions create collaborative learning through exchanging personal and professional experiences and requesting specific information. Work-ready communities are the assessment of each individual's capabilities and how such are met with the career they have chosen.

According to an assessment conducted by Tang (2011) on 64 students regarding their self-concept, academic achievement, and future pathway, the participant selected the future pathway, depending more on their self-concept than their academic capabilities. Therefore,

using the "Ready to Work" concept at school levels, the students can seek employment through their testing in different fields of work. At organizational levels, training, education, and job-profiling of the employees are taken advantage of by observing, through assessments, training, and certification, what other individuals, organizations, and communities are doing. Such behavior and capabilities are due to the ECE provided by the institutes, and the culture of them totally structures the child who wants to be in the future because what a child likes from earlier days will make him gain the skills needed in the next stage of educational life, and such has been carried to alter life if the child doesn't change what he likes for something better (Tepestra, 1993). But still, the child is motivated through the activities conducted by ECE institutes, which makes them enthusiastic about getting involved in selected activities to create an adult out of them.

Most suitable Education Programme

Waldorf ECE Programme

This was introduced by Rudolf Steiner in 1919, where the program starts from birth to seven years and is divided into two parts: from birth to three years, and from three years to seven years. The activities are developed to enhance the body, soul, and spirit to nurture the child, and the curriculum has creative group learning, repetition of activities, and a supportive environment with rhythm. The teachers must have a Waldorf method of teaching certification. Most of the activities have practical life, storytelling, and written activities to develop the interest of the child, and these are for children ages 2 to 5 years old. The educational principles are the attitude of the adult, the environment of the child, rhythmical daily life, and encounters between adults.

UNESCO Benchmarks

The benchmarks provided by UNESCO for ECE are depicted in Table 1.

Table 1

UNESCO Benchmarks

IPC Indicators	**Minimum Core Content Requirements**
1.5 Air Travel; **2.2, 5.1, 6.0** Around theWorld, **1.2** Five Senses, **IPC Colors, Workbook**	**Colors:** All primary colors should be understood and identified. The student should be able to name primary colors with ease.
1.1 Air Travel, **1.3, 1.5** Environment, **1.0 - 1.1** Five Sense, **1.6** Money Shops and Jobs, **1.3** My Family, **1.3** Olympics, **5.2** Summer Time, **1.2** Under the Sea	**Counting:** The student can count with one-on-one correspondence counting up to 10. The student canrecognize individual numbers 1-10 and distinguish between empty and full. Some advanced L1 students can count to 15.
2.6 Air Travel **1.2** Around the World **1.1** Fairy Tales **2.1** Five Senses **2.1** Food and Nutrition **2.2** Olympics	**Listening:** The student should be able to listen and take interest in stories. There should be a comprehension of instructions and a following of teacher or parent orders. The student should achieve an understanding of various sounds in daily life and be able to distinguish them. Repetition exercises to demonstrate a student's listening skills should be undertaken.
1.4 Around the World **8.0** Environment **6.0** Five Senses **4.4, 6.0 - 6.2** Food and Nutrition **6.0 - 6.4** Money, Shops and Jobs **5.0** My Family **6.0** Olympics	**Motor Development:** The student should be able to identify different sensations by touching including texture and temperature. There should be active play or sports that include walking, running, hopping, skipping, and jumping and basic team sports. The student should be able to concentrate on motor skills such as standing on one leg for more than 5 seconds or being able to conduct a specific movement when prompted. Students should be able to color without crossing the outer lines and use scissors, glue paste, pencils and other stationery appropriately. Other motor development learning outcomes include: Being able to build basic structures with building blocks; Being able to draw simple pictures; Being able to appreciate shapes, sizes and patterns used in puzzles; Being able to match items in activities; Being able to trace pictures well.
2.0-3.0 Air Travel; **2.1** Environment **2.3** Five Senses, **2.0** Food and Nutrition **2.5** Money Shapes and Jobs **3.0** Olympics	**Phonics:** Students should be able to identify sounds associated with the letters of the alphabet and begin to appreciate an understanding of how words are formed. Students should be prepared by the end of L1 to form three letter words and be able to write their name.

Robin Phonics **TM workbooks**	**Reading Preparation:** Students should identify each letter of the alphabet and be ready to read three letter words by the end of L1. Students should acknowledge their family members, school colleagues and teachers by name and understand the sounds associated with letters of the alphabet (see Phonics, above). The student should be able to expand his or her vocabulary in English on a daily basis and should be read to daily to ensure this is achievable. The student will understand and be able to convey the meaning of words in his or her vocabulary. The IPC also recommends that a second language is introduced in activity and tuition to ensure bilingual readiness for elementary/primary years. The student will be able to express him or herself verbally and develop skills to communicate thoughts and emotions with words. The student will acknowledge left to right reading and writing skills by completing suitable activities. Creative thinking should be sufficiently developed to be able to tell a story based on pictures.
2.6, 2.7 Air Travel **1.5, 2.0, 2.2 - 2.5** Five Senses **2.1** Food and Nutrition **2.6, 2.7** Money Shapes and Jobs **2.1** Olympics	

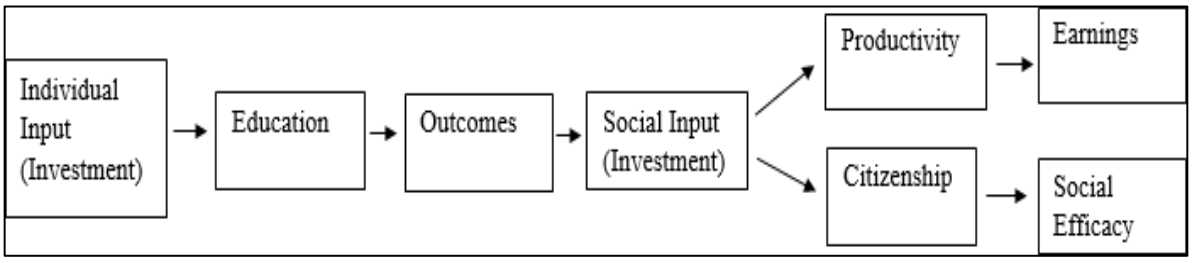
Source: (UNESCO, 2018)

Human Capital Theory

The theory is about investing in education and developing skills through it. It elaborates on how an individual's productivity capacity is increased through education and skills are developed through training.

Figure 1

Human Capital Theory/ Model and the variables of it with the direction of how the variables flow.



Source: (Becker, 1995).

In addition, investments in education lead to better health care and increase a person's performance. The net present value of a person is achieved through gaining the maximum amount of education, where they can create wealth. The duration of ECE to higher education affects it up to equality of marginal cost and marginal benefits from education (Becker, 1995).

Moonshot Model

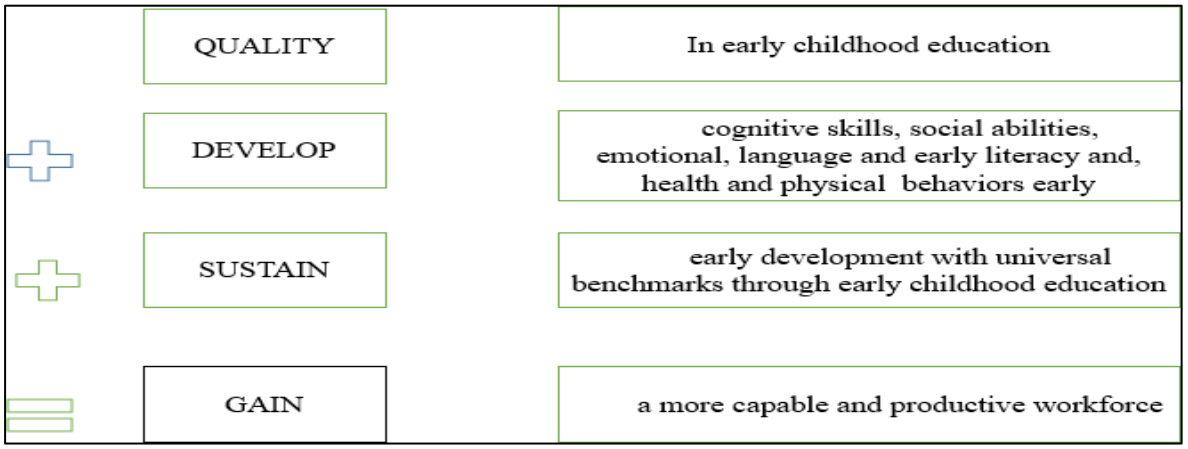
Model is about work and school, whereas school work depicts raw materials such as the availability of the classroom, things, and ideas. Whereas the adult whom the child wants to become is applied through physical and mental skills in a process of training to be productive and develop professionally. The conversation between the people develops from childhood to be greater and grows, thus leading towards productivity, whereas savings for government and individuals gain higher satisfaction with their lifestyles, thus reducing welfare losses (Cavagnaro, 2016).

Theoretical Framework

The theoretical framework has been built around the Heckman research made of the three projects, ABS, CARE, and Perry ECE projects, where he found the four benefits of investing in ECE such as: it can prevent the achievement gap, it can improve health outcomes, it can boost earnings, and it makes dollars and sense (Heckman, 2012). A theoretical framework has been developed where the quality, development, and sustainability of early childhood education provide the gains for economic performance.

Figure 2

Theoretical Framework, which been used by Heckman in his empirical studies.



Source: author's work based on (Heckman, 2012).

Methodology of the Study

Research Design

The pragmatic research philosophy concept is maintained through the research since the author has taken the research question as the most important determinant and tried to find answers for the questions through investigation, whereas the main research question is "What are the long-term economic implications of conducting ECE without UB?" The researcher has used a deductive research approach since hypotheses have been tested through data.

Sampling Method and Data Collection

Snowball sampling is used to collect data through probability sampling. It is inexpensive and simple to collect data through referrals, especially when the data is gathered in a large district (Saunders, 2012). Primary data collection is conducted through a questionnaire distributed to employees between the ages of 19 and 35, and the government also interviews those responsible for developing the ECE of the nation. The questionnaire is selected since it is easier to analyze data in the qualitative aspect. On a Likert scale with 1 representing very weak and 5 representing very strong, a questionnaire has been distributed to the citizens of the Gampaha District, and the main concern was that they need to have been living in the Gampaha District (GD) between the ages of 2 and 5 years. There are 13 divisions in GD, and data has been collected to determine if the candidates have attended ECE or not. Interviews have been conducted with 13 principals, one from each division, in-depth interviews with government ECE authorities, ECE Development Project Officers, and Census and Statistics Department statisticians.

Heckman studies have been taken as the main secondary sources, and according to them, the same age group has been used for this study as well. Heckman is the only researcher who has conducted several studies on ECE and economics; therefore, his studies are taken into consideration. Documents collected from government publications such as the National Survey on Early Childhood Development in Sri Lanka 2010 and 2018 by the Children's Secretariat of the Ministry of Child Development and Women's Affairs, other publications from the Children's Secretariat, and government allocation of budgetary provisions to develop ECE facilities, teacher training, providing meals for children, teacher allowances, and resources provided Early Childhood Development Standards for Sri Lankan Children, ECE Teacher's Guide, National Policy on Early Childhood Development Care and Development,

and Early Childhood Development Centers Standards Service records at the Gampaha Provincial Council include teacher wage allocations, EPT and ETF deductions, and ECE teacher conferences. Therefore, both a qualitative and quantitative approach is made for the research.

Sample population

Through the statistics department, it was identified that there are 1,795,643 employees between the ages of 19 and 35 by 2018, and with the use of the Krejcie and Morgan Sampling Method, it was identified that 384 participants are needed to answer the questions. Since the population is more than 1 million, the table indicates 384 as the sample size for 1 million of the population (Krejcie and Morgna, 1997). The pilot survey was conducted with 8 participants and 5% of the questionnaire questions were modified.

Data Analysis Techniques

Data has been inserted into SPSS software, and analysis has been conducted through the results generated from it, such as correlation analysis, ANOVA testing, the Tukey test, and regression analysis. Since questionnaires are used under the quantitative method, SPSS is required for data analysis. For ethical considerations, the confidentiality of the participants has been maintained by referring them for the analysis under a reference number.

Conceptual Framework

According to the conceptual framework of Heckman (2012), the variables are divided into three sectors: independent, dependent, and mediator variables. Independent variables are health and physical development; cognitive development; social behavior and emotional development; and language and early literacy development since the author is going to identify how far ECE helps to develop economics, such as the long-term economic implications, which is the dependent variable. Quality ECE provides the foundation for these factors, where it led to increases in performance, earnings, and productivity of the adults, and eventually, these factors helped a country increase sales and revenues of a business through better ROI and generating monetary resources. This ROI increases economic growth. The mediator variable is ECE, where it is dependent on capital and augmented labor to develop the economy. Therefore, the benchmarks of the ECE, such as quality-trained teachers, a sound syllabus, a quality environment, quality materials, and quality management at these centers, should be identified.

Hypotheses:

H1: There is a relationship between health and physical development, ECE with universal benchmarks, and long-term economic development.

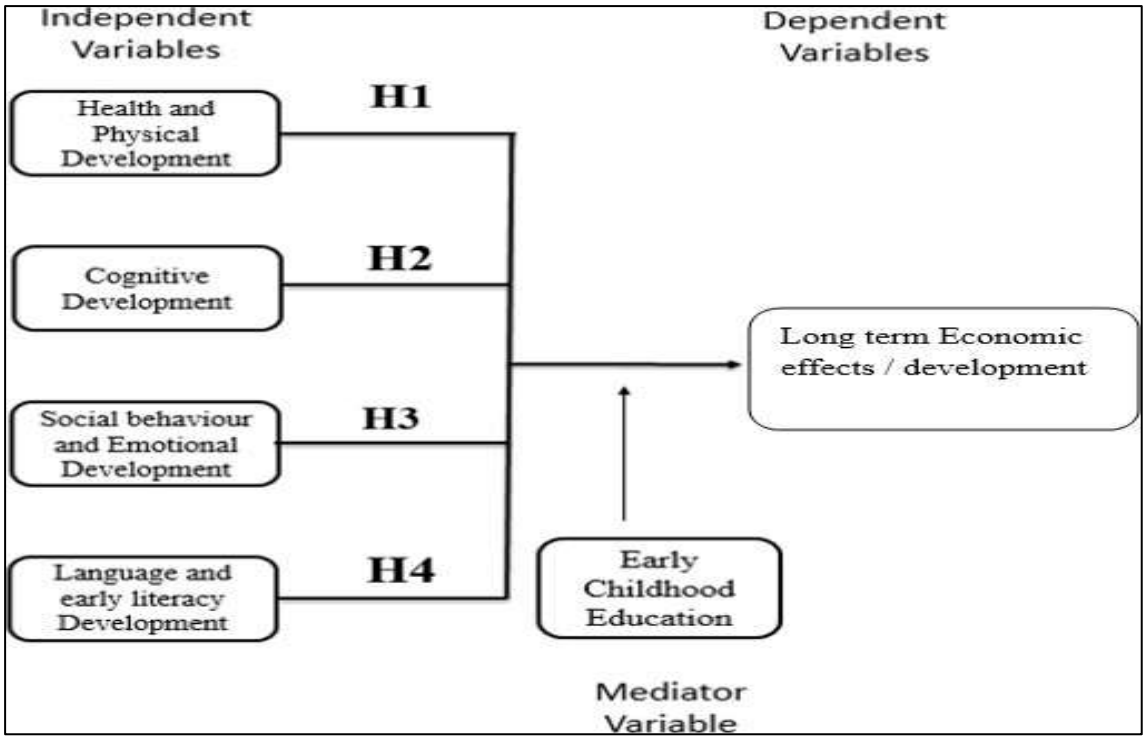
H2: There is a relationship between cognitive development, ECE with universal benchmarks, and long-term economic development.

H3: There is a relationship between social behavior and emotional development, ECE with universal benchmarks, and long-term economic development.

H4: There is a relationship between language and early literacy development, ECE with universal benchmarks, and long-term economic development.

Figure 3

Conceptual Framework developed using the information and data provided in literature



Source: Author's work based on (Hackman, 2012)

Results and Interpretation

Descriptive Analysis

Answers of the ECEC Principals

The principals helped their children become productive citizens for the country by creating a school environment that allowed them to make use of their senses and develop themselves. Most of their past students have passed the Grade Five scholarship examinations (ordinary level and advanced level), whereas they are currently employed and some are at higher levels of the management hierarchy. Therefore, they consider that they have developed the future of their students. The activities that the principals and teachers conducted helped the children to think, read, learn, remember, reason, and pay attention because there were no technological devices. Therefore, their work at school became their play. It is the reason; those children are well employed at different levels in industries.

Answers of the ECE Development Project Officers

Mainly, the unbalance of the ECE standard has occurred because, from district to district, the syllabuses change and the quality of some is questionable due to a lack of resources to implement some policies. There was no proper mechanism to overview the ECE standards due to a lack of resources and proper personnel to conduct such. In addition, ECE in the earlier days was not given proper attention due to a lack of understanding of its comprehensiveness towards building the future adult through the present child. However, with the evolution of technology, many standards have been implemented and conducted.

Answers of the Children Secretariat Officers

In earlier days, the children had a rich home environment where the grandparents and parents who taught them stories and about nature. The traditions and the children had more time to play, communicate, and develop interpersonal relationships. Life was not as complicated as it is now. They learned from observing the environment and adults. Life was simple and about hard labor. With less competition, it was not always about profit motives, but by experience, the people became productive and opened new businesses. The primary and secondary education helped enhance the analytical skills needed to be productive. They had more time to investigate and discover, so they were more focused. Also, the genes from parents made some people more productive, which helped develop the economy. So, the other people

became influenced and productive through their inner urge. The transition those days was less, but currently there are many consecutive transitions.

Answers of the ECE Registration Centre Officers

Sri Lanka follows the ten standards in an ECE from the early days and is currently adding the follow-up of the Teacher's Guide. The supervision mechanism is universally conducted by UNESCO. In the early days, there was no proper curriculum; only the syllabus taught at ECE teacher training centers was followed due to a lack of policies and supervision. Universally, different countries followed the curriculum according to what UNESCO provided, but each made changes according to their cultural preferences.

All of the ECEs had play material to develop the children's' muscles and gross and motor skills as well, because that is one of the standard requirements to register an ECE. Only the teachers who have the NVQ diploma were granted permission to open an ECEC. Also, from earlier days till today, the government conducts annual training programs for all the ECE teachers to keep them updated about the new systems and methodologies in teaching. Even to become an ECE teacher, it is necessary to pass the Advanced Level examinations.

Answers of the Census and Statistic Department Officers

According to earlier data collections they have conducted with the labor force and their productivity, it is identified that better efficiency and productivity enable employees to complete tasks on time, and the government does not have to pay employees over time to complete tasks and allocate more employees to finish the tasks, which provided cost cutting at the workplace. Working on time and efficiently is instilled in children, and this desire continues into adulthood.

Quantitative Analysis

The variables that have been highlighted in the collection of data towards increasing the long-term performance of the workforce are cognitive, physical, and health; language and literacy; and social and emotional behavior through ECE. Heckman study results from 2017 were used as the control group (Heckman, 2017).

By using the Pearson Correlation Analysis, it has been identified that there is a medium-positive relationship between cognitive factors and long-term economic effects (LTEE) of an

individual when ECE is given. The correlation was measured at 0.664, while there is a 44.1% influence of LTEE over cognitive factors according to linear regression.

Table 2

Correlation of Cognitive and Long-term

Descriptive Statistics

	Mean	Std. Deviation	N
Cognitive	2.5651	.72690	384
Long-term	2.7604	.60017	384

Correlations

		Cognitive	Long-term
Cognitive	Pearson Correlation	1	.664**
	Sig. (2-tailed)		.000
	N	384	384
Long-term	Pearson Correlation	.664**	1
	Sig. (2-tailed)	.000	
	N	384	384

**. Correlation is significant at the 0.01 level (2tailed)

Source: survey data

As a correlation has been established with significance, it is clearly indicated that cognitive factors that develop ECE activities do have a considerable contribution to LTEE. Based on this factor, we can accept hypothesis H_2 in the conceptual framework. It has been measured that there is a moderately positive relationship between physical factors and LTEE with a correlation of 0.426 and that physical factors influence LTEE by 18%.

Table 3

Correlation of Physical/ Health and Long-term

Descriptive Statistics

	Mean	Std. Deviation	N
Physical	2.8177	.54375	384
Long-term	2.7604	.60017	384

Correlations

		Physical	Long-term
Physical	Pearson Correlation	1	.426**
	Sig. (2-tailed)		.000
	N	384	384
Long-term	Pearson Correlation	.426**	1
	Sig. (2-tailed)	.000	
	N	384	384

Source: Survey data

The acceptance of the hypothesis H1 can be established as correlation and linear regression are both conducive of showing that the independent variable of physical factors does have influence over LTEE. Literacy and language have 0.617 moderate positive relationship with LTEE and theinfluence over it is 31.8% according to linear regression.

Table 4

Correlation of Literacy/ Language and Long-term

Descriptive Statistics

	Mean	Std. Deviation	N
Literacy	2.4479	.76979	384
Long-term	2.7604	.60017	384

Correlations

		Literacy	Long-term
Literacy	Pearson Correlation	1	.617**
	Sig. (2-tailed)		.000
	N	384	384
Long-term	Pearson Correlation	.617**	1
	Sig. (2-tailed)	.000	
	N	384	384

**. Correlation is significant at the 0.01 level (2-tailed)

Source: Survey data

Thus, there is 0.255 of moderate positive correlation between social factors and LTEE. The influence over LTEE is 25.5% with social factors according to linear regression. The established value of correlation and linear regression be combined together can lead to the acceptance of the third hypothesis H4 which can effectively show the literacy at a ECE level will have a considerable acceptable level of influence over LTEE. Emotional factors and LTEE has a 0.454 medium positive relationship and there are 24.7% influence over LTEE by emotional factors according to linear regression.

Table 5

Correlation of Emotional and Long-term

Descriptive Statistics

	Mean	Std. Deviation	N
Emotional	2.5938	.55182	384
Long-term	2.7604	.60017	384

Correlations

		Emotional	Long-term
Emotional	Pearson Correlation	1	.454**
	Sig. (2-tailed)		.000
	N	384	384
Long-term	Pearson Correlation	.454**	1
	Sig. (2-tailed)	.000	
	N	384	384

**. Correlation is significant at the 0.01 level (2-ailed).

Source: Survey data

Evaluating the independent variable of social skills that are developed at ECE level, it is evident that there is a medium positive relationship based on correlation measured at 0.505 which is indicated that there is an influence over LTEE.

Table 6

Correlation of Social behaviour and Long-term

Descriptive Statistics

	Mean	Std. Deviation	N
Social	2.8464	.55018	384
Long-term	2.7604	.60017	384

Correlations

		Social	Long-term
Social	Pearson Correlation	1	.505**
	Sig. (2-tailed)		.000
	N	384	384
Long-term	Pearson Correlation	.505**	1
	Sig. (2-tailed)	.000	
	N	384	384

**. Correlation is significant at the 0.01 level (2-tailed)

Source: author's work

Social skills developed at ECECs also have a noticeable level of influence on LTEE based on the linear regression measure of 0.255, which indicates that there is a 25.5% chance that social skills will have an impact on LTEE according to linear regression. Each of these factors clearly indicates that hypothesis H3 can be accepted with regard to this study.

ANOVA Test

It is also identified that when the number of years attended for ECE increases, the level of performance also increases. Thus, it has been shown through ANOVA testing that two years of attendance in ECE can increase the performance level by 11%. By not attending ECE, there is a positive significance of 0.186 with LTEE.

According to the control group, significance for employment from early age was 0.5 and the present research showed 0.7. Monthly income showed 0.352 while the control group has 0.231 of significance. Attending ECE showed 0.57 and the control group had 0.394.

Table 7

Analysis of Variance / ANOVA

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Cognitive	Between Groups	5.539	3	1.846	3.564	.014
	Within Groups	196.834	380	.518		
	Total	202.372	383			
Physical	Between Groups	3.533	3	1.178	4.079	.007
	Within Groups	109.707	380	.289		
	Total	113.240	383			
Emotional	Between Groups	.462	3	.154	.504	.680
	Within Groups	116.163	380	.306		
	Total	116.625	383			
Literacy	Between Groups	5.619	3	1.873	3.216	.023
	Within Groups	221.339	380	.582		
	Total	226.958	383			
Social	Between Groups	1.716	3	.572	1.903	.129
	Within Groups	114.219	380	.301		
	Total	115.935	383			
Long term	Between Groups	2.102	3	.701	1.959	.120
	Within Groups	135.857	380	.358		
	Total	137.958	383			

Source: Survey data

Table 8

Coefficients

Coefficients [a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.623	.172		3.625	.000
	Cognitive	.340	.052	.411	6.475	.000
	Physical	.044	.050	.040	.881	.379
	Emotional	.127	.049	.117	2.601	.010
	Literacy	.120	.051	.154	2.371	.018
	Social	.135	.052	.123	2.598	.010
	Gender_D	.056	.047	.047	1.206	.228
	q11D1	-.014	.056	-.010	-.255	.799

a. Dependent Variable: Long term

Source: Survey data

Tukey Test

There are mean differences at cognitive, where they are significant during the first and second years (0.30979) of attendance in ECE. At physical (0.22848) and literacy (0.31108), they are also the same. At the emotional, social, and LTEE levels, there is no significant difference.

Table 9a

Multiple Comparisons

Tukey HSD							
Dependent Variable	(I) Q11	(J) Q11	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Cognitive	1	2	-0.2587	0.17028	0.427	-0.6981	0.1807
		3	0.0511	0.15872	0.988	-0.3585	0.4607
		4	-0.0685	0.16874	0.977	-0.5039	0.367
	2	1	0.2587	0.17028	0.427	-0.1807	0.6981
		3	.30979*	0.09563	0.007	0.063	0.5566
		4	0.19023	0.11148	0.322	-0.0974	0.4779
	3	1	-0.0511	0.15872	0.988	-0.4607	0.3585
		2	-.30979*	0.09563	0.007	-0.5566	-0.063
		4	-0.1196	0.09286	0.571	-0.3592	0.1201
	4	1	0.06847	0.16874	0.977	-0.367	0.5039
		2	-0.1902	0.11148	0.322	-0.4779	0.0974
		3	0.11956	0.09286	0.571	-0.1201	0.3592

Table 9b

Tukey HSD							
Dependent Variable	(I) Q11	(J) Q11	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Physical	1	2	-0.319	0.12713	0.06	-0.6471	0.009
		3	-0.0905	0.11849	0.871	-0.3963	0.2152
		4	-0.1174	0.12598	0.788	-0.4425	0.2076
	2	1	0.31902	0.12713	0.06	-0.009	0.6471
		3	.22848*	0.07139	0.008	0.0443	0.4127
		4	0.20158	0.08323	0.075	-0.0132	0.4163
	3	1	0.09054	0.11849	0.871	-0.2152	0.3963
		2	-.22848*	0.07139	0.008	-0.4127	-0.0443
		4	-0.0269	0.06933	0.98	-0.2058	0.152
	4	1	0.11744	0.12598	0.788	-0.2076	0.4425
		2	-0.2016	0.08323	0.075	-0.4163	0.0132
		3	0.0269	0.06933	0.98	-0.152	0.2058

Table 9c

Tukey HSD							
Dependent Variable	(I) Q11	(J) Q11	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Emotional	1	2	-0.1457	0.13081	0.681	-0.4832	0.1919
		3	-0.108	0.12193	0.812	-0.4227	0.2066
		4	-0.075	0.12963	0.939	-0.4095	0.2595
	2	1	0.14565	0.13081	0.681	-0.1919	0.4832
		3	0.03763	0.07346	0.956	-0.1519	0.2272
		4	0.07069	0.08564	0.842	-0.1503	0.2917
	3	1	0.10802	0.12193	0.812	-0.2066	0.4227
		2	-0.0376	0.07346	0.956	-0.2272	0.1519
		4	0.03306	0.07134	0.967	-0.151	0.2171
	4	1	0.07496	0.12963	0.939	-0.2595	0.4095
		2	-0.0707	0.08564	0.842	-0.2917	0.1503
		3	-0.0331	0.07134	0.967	-0.2171	0.151

Table 9d

Tukey HSD							
Dependent Variable	(I) Q11	(J) Q11	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Literacy	1	2	-0.2967	0.18057	0.356	-0.7627	0.1692
		3	0.01434	0.16831	1	-0.42	0.4486
		4	-0.085	0.17894	0.965	-0.5467	0.3768
	2	1	0.29674	0.18057	0.356	-0.1692	0.7627
		3	.31108*	0.10141	0.012	0.0494	0.5728
		4	0.21178	0.11822	0.279	-0.0933	0.5168
	3	1	-0.0143	0.16831	1	-0.4486	0.42
		2	-.31108*	0.10141	0.012	-0.5728	-0.0494
		4	-0.0993	0.09848	0.745	-0.3534	0.1548
	4	1	0.08496	0.17894	0.965	-0.3768	0.5467
		2	-0.2118	0.11822	0.279	-0.5168	0.0933
		3	0.0993	0.09848	0.745	-0.1548	0.3534

Table 9e

Tukey HSD							
Dependent Variable	(I) Q11	(J) Q11	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Social	1	2	-0.0576	0.12971	0.971	-0.3923	0.2771
		3	0.10399	0.1209	0.825	-0.208	0.416
		4	0.10245	0.12854	0.856	-0.2292	0.4341
	2	1	0.05761	0.12971	0.971	-0.2771	0.3923
		3	0.1616	0.07285	0.12	-0.0264	0.3496
		4	0.16006	0.08492	0.236	-0.0591	0.3792
	3	1	-0.104	0.1209	0.825	-0.416	0.208
		2	-0.1616	0.07285	0.12	-0.3496	0.0264
		4	-0.0015	0.07074	1	-0.1841	0.181
	4	1	-0.1025	0.12854	0.856	-0.4341	0.2292
		2	-0.1601	0.08492	0.236	-0.3792	0.0591
		3	0.00154	0.07074	1	-0.181	0.1841

Table 9f

Tukey HSD							
Dependent Variable	(I) Q11	(J) Q11	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Long term	1	2	-0.1886	0.14147	0.542	-0.5536	0.1765
		3	-0.0065	0.13186	1	-0.3468	0.3338
		4	-0.102	0.14019	0.886	-0.4637	0.2598
	2	1	0.18859	0.14147	0.542	-0.1765	0.5536
		3	0.18209	0.07945	0.102	-0.0229	0.3871
		4	0.08664	0.09262	0.786	-0.1524	0.3256
	3	1	0.0065	0.13186	1	-0.3338	0.3468
		2	-0.1821	0.07945	0.102	-0.3871	0.0229
		4	-0.0955	0.07715	0.604	-0.2945	0.1036
	4	1	0.10195	0.14019	0.886	-0.2598	0.4637
		2	-0.0866	0.09262	0.786	-0.3256	0.1524
		3	0.09545	0.07715	0.604	-0.1036	0.2945
*. The mean difference is significant at the 0.05 level.							

Source: Survey data

Regression Analysis

In this study, individuals receiving different amounts of ECE may differ systematically. It is not clear that ordering assumptions are appropriate. An underlying assumption for ordered probity or logic model is that there is a monotonic relationship between the latent probability of choosing years of ECE and not attending ECE against the variables. As explained by Arteaga (2016) given the various reasons why children may have various exposures to ECE, children who received one year of ECE, for example, may be more or less disadvantaged than those who received two or zero. According to Heckman (2012) students who participated for two years may be more or less disadvantaged than those who have zero or one, if recruitment

efforts targeted the most in need or if more stable or motivated parents enrolled their children for two years. There is an unordered multinomial regression seems to be more appropriate in this case since the dependant variable has more than two categories. Used the Ordinary Least Squares (OLS) Principal Frost (2017) to predict the average of the variables, since the OLS for linear regression can analyse multiple variables simultaneously to answer complex research questions.

Model specifications

Y = long term economic effect

$\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6, \alpha_7$ = coefficient (B)

α_0 = constant

d_1 =1 for those who attended ECE

d_1 = 0 for those who have not attended ECE

χ_1 = cognitive factors

χ_2 = physical factors

χ_3 = emotional factors

χ_4 = literacy factors

χ_5 = social factors

The function should be then:

$$Y = \alpha_0 + \alpha_1\chi_1 + \alpha_2\chi_2 + \alpha_3\chi_3 + \alpha_4\chi_4 + \alpha_5\chi_5 + \alpha_6 d_1$$

To identify the significance of the model the following summary is used, where the model has proved to be significant.

Table 10

Regression Analysis summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.702a	.492	.484	.43108

a. Predictors: (Constant), NA, Cognitive, Emotional, Physical, Social, Literacy Source: Survey data

The results related to overall significance of the model is Statistical significance can be identified through dividing the regression mean square (11.317) from the standard error estimation (0.43). The answer is 26.318, therefore the overall relationship between attending or not attending ECE with other independent variables against dependent variable (LTEE) is significant. To validate the regression model, the error term (Britannica, 2018) of the assumptions which has a positive significant (0.186), while NA is considered as not attended ECE.

Summary and Conclusion

The gaps in the ECE in Sri Lanka are mainly due to less policy involvement in the matter, where there is no specific curriculum to be followed by the whole country. Most of the government ECECs lack efficient teachers, meal plans, materials and motivation for the staff. Such has led towards low quality ECE provided by the government ECECs. The curriculum in the GD lack in writing where the gross and fine motor skills need to be sharpened at the age three to five in order to develop the muscles and the movements of the children's hands. Therefore, the long-term economic implications of ECE gaps are low attention spans, been good citizens, low creativity, less writing skills, and unable to share and help others Heckman (2019) since early literacy foundation has not been laid properly.

The relationship between the ECE and long-term economic performance were proven through the conceptual framework and the hypotheses where according to the Heckman (2017) research results showed the employment at early age in the treatment effect was 0.394, control group standard error 0.5 and the treatment group standard error is 0.7. In the Sri Lankan context, the author found the same result as the treatment effect group which is 0.997. Monthly income treatment effect is 0.607, control group standard error is 0.231 and treatment group standard error is 0.352. The Sri Lankan effect group was 0.57. Thus, shows the effect of not having ECE with UBs where similar as Heckman result where employees have performance errors and low earning capabilities has affected the economy.

When examined the relationship between providing education without ECE and its long-term economic performance, the author found through the regression analysis the yield was 0.181, cognitive vs. long-term effects was 0.664, emotional vs. long-term effect was 0.454, literacy and long-term effect was 0.617, and social vs. long-term effect was 0.505 and physical and health vs. long-term effect was 0.426. Therefore, a medium positive correlation could be found between the independent variable with the dependent variable.

Elaborating on the long-term economic consequences of providing the ECE without UBs, shows through the dispersion rate of the variables such as cognitive vs. long-term effects was 24.7%, literacy and long-term effect was 31.8%, and social and emotional vs. long-term effect was 25.5% and physical and health vs. long-term effect was 18%. Such low dispersion rate has occurred because there were no UBs in the ECE system according to Heckman (2017) study where he has also got similar results for his research at Perry ECE gained personal and family

life effects on education, health, employment and civil life and contributed upward mobility in the next generation to break the cycle of poverty by providing UBs for ECE.

The relationship between the ECE and LTEE were proven through the conceptual framework and the hypotheses whereas according to the Heckman (2017) research results showed the employment at early age in the treatment effect was 0.394, control group standard error 0.5 and the treatment group standard error is 0.7. In the Sri Lankan context, the author found the same result as the treatment effect group which is 0.997. Monthly income treatment effect is 0.607, control group standard error is 0.231 and treatment group standard error is 0.352. The Sri Lankan effect group was 0.57. Thus, shows the effect of not having ECE with UBs where similar as Heckman result where employees have performance errors and low earning capabilities has affected the economy.

Through the findings, it is shown that there is a relationship between standard ECE and long-term economic effects since the performance of the workforces affects the economic growth. Whereas, the criminal activities are higher with the participants who have not attended ECE and also who has attended ECE are already employed in different field of industries. There is a growth of physical and health factors when ECE attended for longer years. It is been identified that the base for cognitive development is provided through ECE and also proper communication, literacy, social and emotional behaviour. The quality and standards of ECE can only be provided through applying UBs into the ECE and constant assessment of the quality of the education provided by the teachers where such could go a long way. Therefore, with the results under the Sri Lankan context and Heckman studies, it is visible that ECE with universal benchmarks are compulsory for the long-term economic performance.

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