



The Challenges of Improving Statistical Literacy in Developing Countries: Small Country Experiences in Sri Lanka

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Abstract

Concept of “literacy and illiteracy” is the most conventional and controversial subject in the process of economic, social and political transformation. Elimination of illiteracy and the growths of literacy are enormous challenge for improving the common literacy which is an urgent need to improve measures of literacy in developing countries, because, one in four young people in developing countries are unable to read and write a sentences, which notifies that poor quality education has left a "legacy of illiteracy" more widespread than previously. Therefore, an improvement of the “statistical literacy” is a massive challenge in the context of illiteracy and literacy. There are about 1 billion non-literate adults which is approximately 26 percent of the world's adult population. The elimination of common illiteracy and the growths of universal literacy are essential and necessary requirements, but not sufficient conditions for the improvement of statistical literacy. There are many other under lying factors are affecting for the improving statistical literacy. It is defined as the ability to understand the real meaning of statistics published for different purposes that are necessary for nations to understand statistics presented in such publications as newspapers, periodicals, television and the Internet. This paper describes on challenges and barriers that recognizing for improving the ability of statistical literacy at grass-roots level, which is based on the lying factors of endogenous and exogenous. These problems are endogenous lying within official statistics itself on grounds of weaknesses of institutional and organizational set-up, of lack of resources and infrastructure or operational inadequacies. The exogenous lying outside of official statistics perceived as inability of the civil society, establishments or even of the administration to part reliable and timely data. Sri Lanka as a developing economy with an excellent track record of adult literacy rate, although presenting poor performances of statistical literacy. Lack of general knowledge, unavailability of skilled individuals and weak disseminations are key drawbacks. There is no proper legal obligation to collect and updating of vital data in some areas. The general public are not interested of many important statistics relevant their life, neither they have received basic knowledge to understand those vital statistics. The essay contributes to the emerging issues of statistical literacy in developing country to communicate basic statistical literacy by examining the issues pertaining to the enthusiasm of policy makers, academicians, officials & publics and other stakeholders who are used in statistics for various communication purpose that analyzing and reviewing the challenges of improving on statistical literacy, particularly by using of the unique experiences of Sri Lanka.

Key Words: Illiteracy, statistics, institutional, disseminations, data and information,

Section : 1. Introduction : Question of illiteracy, Vital Challenge for Statistical literacy

The concept of universal “literacy and illiteracy” is the most conventional and controversial themes of the process on economic, social and political transformation in less developing countries. Elimination of illiteracy and the expansions of literacy are vital challenge for the improving the level of universal literacy which is an urgent need to improve measures of literacy in these countries, because, one in four young people in developing countries are unable to read and write a sentences, according to a UNESCO, which warns that poor quality education has left a "legacy of illiteracy" more widespread than previously believed. Therefore, an improvement of the “statistical literacy” is a real challenge for the context of common literacy in developing countries. According to UNESCO, in the world today there are about 1 billion non-literate adults. This 1 billion is approximately 26 percent of the world's adult population. About 98 percent of all non-literates live in developing countries. The overall illiteracy rate is 49 percent in the least developed countries. In the world today, the number of people speaking lesser-known languages is more than one billion that is 20 percent of the world's population. Of the world's non-literate population, an estimated 476 million are speakers of lesser-known languages. In other words, approximately 50 percent of all non-literates are minority language speakers. There is a correlation between income and illiteracy. Per capita income in countries with a literacy rate less than 55 percent averages about \$600, while the per capita income in countries with a literacy rate above 96 percent is \$12,600. Consequently, it is obvious to note that the elimination of common illiteracy and the expansions



of universal literacy are essential requirements, but not sufficient conditions for the improvement of the statistical literacy. There are many other underlying factors affecting the improving statistical literacy and skills in developing countries. Because statistical literacy is defined as the ability to understand the real meaning of statistics published for different purposes. It is necessary for a nation to understand statistics presented in such publications as newspapers, periodicals, television and the Internet. Statistical literacy involves the ability to read and interpret the data in tables and graphs published by the government or any other statistical organizations. Skills are the ability to use one's knowledge effectively and readily in execution or performance. The statistical skills of certain category of employees are essential to raise their productivity as well as the overall performance of the economy is concerned. The need of statistical skills become critical in higher learning of even medical, agricultural, social and behavioral science once they initiate working on practical projects. Researcher cannot ignore science of statistics. It is essential tool for designing research, processing & analyzing data and drawing inferences.

Considering of these backgrounds and involvements, this paper attempts to analyzing and reviewing the challenges of improving on statistical literacy and skills in developing countries, particularly by using of small country experiences in Sri Lanka. Paper reflects on challenges and barriers that identifying for improving the capability and capacity of statistical literacy at grass-roots level in a developing country, which are based on the lying factors of endogenous and exogenous. These complications in most countries are endogenous lying within official statistics itself on grounds of weaknesses of institutional and organizational set-up, of lack of resources and infrastructure or operational inadequacies. The exogenous lying outside of official statistics perceived as inability of the civil society, establishments or even of the administration to part reliable and timely data. Lastly, essay aims to contribute to the emerging issues of statistical literacy in a developing country to communicate basic statistical literacy subject by examining issues pertaining to the enthusiasm of policy makers, academicians, administrators, & publics and many other stakeholders who used in statistics for various communication purpose.

Sri Lanka is a small economy with an excellent track record of collecting, tabulation, analyzing, and dissemination of various type of socioeconomic, political, environmental, health and other statistics. The wealth of these statistics are used for variety of planning and policy making activities by the public institutions and other national and international organizations. A number of key government institutions are responsible for data collection and dissemination in Sri Lanka. There are three government institutions are responsible for data collection and dissemination. Department of Census and Statistics (**DCS**) has the mandate for all national level statistics while the Central Bank of Sri Lanka (**CBSL**) is responsible for the handling some economic and social statistics of the country. Hector Kobbekaduwa Agrarian Research and Training Institute (**HARTI**) are responsible for collecting, analyzing and disseminations of Agricultural Market Information System (**AMIS**), particularly food prices and market information for the purpose of measuring food security, and providing price signals for whole agricultural marketing stakeholders, including small farmers and policy makers.

There are dark spots of the bright picture of the data collection and dissemination in the country. Lack of general statistical literacy and unavailability of skilled individuals to collect, analyze and dissemination of data is key drawbacks of the country. Similarly, there is no proper legal obligation to collect and updating of vital data in some areas. The general public is not interested of many important statistics relevant their life or they have not received basic knowledge to understand those vital statistics. A limited number of training programs are conducted to improve the skills of individuals involved with data collection and dissemination though it is not sufficient to meet the modern data requirement of the country. Some programs are not providing basic knowledge on statistics literacy, so that the general public is not in a position to make use of vital statistics in their day today life. The dividends of invested capital on statistics collection and dissemination are not receiving the country as a result of those measures. However, it is obvious to note that the "Sri Lanka" has ample capacity and capability to further expand and improving statistical knowledge and usage of the statistical literacy in various sectors and academic



disciplines, owing to the higher quality of human resources, when compared to the other countries in the region. The following table provides the essential evidences for this incident.

Sources: Human Development Report, 2015.

| Literacy rate, Life expectancy and Human development in South Asian Countries | | | | | | |
|--|------------------|-------------------|--------------|--------------|-----------------|-----------------|
| | Sri Lanka | Bangladesh | India | Nepal | Pakistan | Maldives |
| Life Expectancy at Birth (2015) | 78 | 72 | 69 | 70 | 67 | 79 |
| Literacy Rate % (2015) | 92.6 | 61.5 | 72.1 | 64.7 | 57.5 | 99.3 |
| Literacy Rate of Elderly (65+) | 76.7 | 35.5 | 35.2 | 17.1 | 24.9 | - |
| Literacy Rate of Adult (15+) | 91.2 | 57.7 | 62.8 | 57.4 | 54.9 | - |
| Literacy Rate of Youth (15 – 24) | 98.2 | 78.7 | 81.1 | 82.4 | 70.7 | - |
| Human Development Index and Country Rank | 0.766 | 0.579 | 0.624 | 0.558 | 0.550 | 0.701 |
| | 73 | 139 | 131 | 144 | 147 | 105 |

Section:2. Illiteracy, literacy and statistical literacy

Statistical literacy is defined as the ability to understand the real meaning of statistics published for different purposes. It is necessary for a nation to understand statistics presented in such publications as newspapers, periodicals, television and the Internet. “Statistical literacy involves the ability to read and interpret the data in tables and graphs published by the government statistical associations¹”. Statistical literacy has long history; it has only recently become a goal for statistical academicians and professionals. Skills are the ability to use one's knowledge effectively and readily in execution or performance. The statistical skills of certain category of employees are essential to raise their productivity as well as the overall performance of the economy is concerned. The need of statistical skills become critical in higher learning of even medical, agricultural, social and behavioral science once they initiate working on practical projects and research. Researcher cannot ignore science of statistics. It is an essential tool for designing research, processing & analyzing data and drawing inferences.

Literacy is the ability to read, view, write, design, speak and listen in a way that allows peoples to communicate effectively. The power of literacy lies not just in the ability to read and write, but rather in a person’s capacity to apply these skills to effectively connect, interpret and separate the intricacies of the world in which they live. Today, many countries are being classed as ‘digital natives’ – just as comfortable online as they are offline. The internet enables endless educational possibilities, with constantly evolving information streams, however, the vastness of the internet can be a hindrance to those peoples who cannot effectively sift through and interpret the material presented. Strong literacy skills are a key tool used when peoples determine and interpret information, enabling them to utilize the internet to its full potential and making sure that the inevitable ‘digital footprint’. On the other hand, illiteracy is reading and writing skills that are inadequate "to manage daily living and employment tasks that require reading skills beyond a basic level". Functional illiteracy is contrasted with illiteracy in the strict sense, meaning the inability to read or write simple sentences in any language. According to UNESCO, in the world today there are about 1 billion non-literate adults in the world, that most are concentrated in developing counters in Africa, Asia and Latin America. Some specific data and information is given below.

- This 1.25 billion is approximately 26 percent of the world's adult population.
- Women make up two-thirds of all non-literates.
- 98 percent of all non-literates live in developing countries.

1 I.Gal, Functional demand of statistical literacy: Ability to read releases from statistical agencies. IASE. At www.stat.auckland.ac.nz/~iase/publications/3/016.pdf,2003



- In the least developed countries, the overall illiteracy rate is 49 percent.
- 52 percent of all non-literates live in India and China.
- Africa as a continent has a literacy rate of less than 60 percent.
- In Sub-Saharan Africa since 1980, primary school enrollment has declined, going from 58 percent to 50 percent.
- In all developing countries, the percentage of children aged 6-11 not attending school is 15 percent. In the least developed countries, it is 45 percent.(UNESCO)

In the world today, the number of people speaking lesser-known languages is 1.25 billion, which is 20 percent of the world's population.

- The average adult literacy rate among that population is an estimated 31 percent.
- The average adult literacy rate in their mother tongue among speakers of lesser-known languages is an estimated 12 percent.
- 26 countries have more than 90 percent of the total national population speaking lesser-known languages. The average literacy rate in these countries is 63 percent.
- 21 countries have less than 1 percent of the total national population speaking lesser-known languages. The average literacy rate in these countries is 93 percent.
- Of the world's non-literate population, an estimated 476 million are speakers of lesser-known languages. In other words, approximately 50 percent of all non-literates are minority language speakers.

There are effective correlation between income levels and amount of illiteracy in various countries.

- ✓ Per capita income in countries with a literacy rate less than 55 percent averages about \$600
- ✓ Per capita income in countries with a literacy rate between 55 and 84 percent is \$2,400
- ✓ Per capita income in countries with a literacy rate between 85 and 95 percent is \$3,700
- ✓ Per capita income in countries with a literacy rate above 96 percent is \$12,600

Section: 3. Small Country Experiences : What's Sri Lanka Practices

The paper examines socioeconomic implications of the poor statistical literacy and Skills of the general public and lack of skilled individuals in collection and dissemination of data in Sri Lanka. Country's population has a literacy rate of 92 per cent, higher than expected for a developing country; it has the highest literacy rate in South Asia and overall, one of the highest literacy rates in Asia. Definition of a literate person who is a person literate when one can both read and write with understanding a short simple statement on his/her everyday life in Sri Lanka. The economy of Sri Lanka has made great steps in overcoming poverty as it transitions from a lower income to a middle income country.

It is obviously note, despite of higher economic growth rate with highest rate of literacy in the Asia, the poor statistical literacy and skills of the general public and lack of skilled individuals is questionable. The insufficient level of statistical literacy and skills on collection and dissemination of data and information have some problems of curtailing the prices signaling in the markets, allocation of resources, low productivity and wrong interpretations with the unawareness of the general public.

(a) Department of Census and Statistics: The DCS functions under the two ordinances namely the Census Ordinance and the Statistics Ordinance in 1935. The DCS is the key statistical agency in Sri Lanka, which is responsible for collection, compilation, analysis and dissemination of all statistical data needed for planning, policy formulation and to monitor the progress of various development activities and also to measure the impact of various governmental policies. The DCS is as well entrusted with taking of all censuses and sample surveys relating to the socio-economic conditions of the people of Sri Lanka. Data comprehensibility is growing challenge for the DCS in Sri Lanka, as their users are less likely to be data analysts. A good understanding of statistical concepts and methodologies and their correct interpretation is essential to the proper and effective use of official statistics. Therefore, to improve the utility of statistics and their relevance to the country's social and economic developments, the DCS need to be work continually to promote statistical literacy and skills in community which are most lacking part



of the system. Thus, the DCS may need to promote statistical literacy for consumers externally and fluency in data presentation internally in order to avoid jeopardizing their core mission.

(b) Central Bank of Sri Lanka: Established in 1950 under the Monetary Law Act No.58 of 1949, the Central Bank of Sri Lanka (CBSL) is the apex institution in the financial sector in Sri Lanka. With a view to encouraging and promoting the development of the productive resources of Sri Lanka, the CBSL is responsible for securing its core objectives of economic and price stability and financial system stability. CBSL is another key agency in the country, which are responsible for collection, compilation, analysis and dissemination of all economic statistical data need for macroeconomic policy planning, management and monitoring the economic development activities and also measure the impact of various economic policies. In case of the central bank economic data, statistical literacy does not appear as a high priority with many national economic statistics. Therefore, the improvement of statistical literacy is one of the most important challenges that bank have to cope with at the process of economic globalization. In this context, data comprehensibility is a growing disagreement for economic statistics as their users are less likely to be data analysts. But if the professional users – the administrative official cannot accurately interpret the data provided by the agency, they may make bad decisions that would be the serious problems for general public.

(c) Agrarian Research and Training Institute: Hector Kobbekaduwa Agrarian Research and Training Institute (**HARTI**) were established in act of No. 5 in 1972 and conducting the socio-economic research and training activities. Agricultural Marketing Information system (**AMIS**) has been introduced in 1979 at HARTI and operated by the Marketing, Food Policy and Agri-Business Division (**MFPAD**). MFPAD is accountable for collecting, and disseminations of agricultural price data, particularly food prices and market information for the purpose of measuring food security and providing price signals for whole agricultural marketing stakeholders, including small farmers, traders and policy makers. The basic issues and discussion of the problems and challenges on statistical literacy and skills is key to concern on the AMIS in Sri Lanka. This paper is also discusses the implications of HARTI market information system in collection and dissemination on statistical literacy and lack of skilled particularly rural farmers' individuals, while on general public's in Sri Lanka. AMIS plays an important role in food supply chain in Sri Lanka. The ability of AMIS to provide a valuable service has been strengthened with the development of the Internet and the advance of electronic commerce and industry. AMIS are information system used in gathering, analyzing and disseminating information about prices and other information relevant to farmers, traders, policy makers, processors and others involved in handling agricultural products. It's commonly understood that long transaction chains, lack of transparency, lack of standards, and insufficient access to markets for products has perpetuated low incomes in predominantly in the agrarian economy. The recent surge of mobile phone usage in developing countries has provided an opportunity for innovative projects to leverage this new distribution channel to get critical market data into the hands of farmers and traders, if there are higher level of statistical literacy and skills in these communities. To achieve these benefits, the information system must provide relevant, reliable timely accessible and responsive information to the particularly farmers.

Section: 4. Statistical Literacy Issues and Prospects of a Small Country

There are dark spots of the bright picture of the data collection and dissemination in the country. Lack of general statistical literacy and unavailability of skilled individuals to collect, analyze and dissemination of data are key drawbacks of the country. Similarly, there is no proper legal obligation to collect and updating of vital data in some areas of the country. The general public are not interested of many important statistics relevant their life, neither they have received basic knowledge to understand those vital statistics. The education system of country is not providing basic knowledge on statistics literacy, so that the general public is not in a position to make use of vital statistics in their day today life.

4.1 Lack of Cooperation from Respondents: There is no proper legal obligation to collect and updating of vital data in some areas. The general public are not interested of many important statistics relevant their life, for example on food prices, neither they have received basic knowledge to understand those vital



statistics. Unlike demographic, health and certain other social conditions, income related activities are not readily reported by the communities. Specially, traders, farmers and other business stakeholders in agricultural marketing system are completely reluctant to provide their real prices and costs in business tricks. When such information is given, sometime, there are erroneous. Sometime, there is total refusal to provide such information. The key reason for this was the incapability to understand the real meaning of statistics due to the lack of general statistical literacy and unavailability of skilled farmers, traders and individuals. Therefore, it is clear to note that the AMIS in Sri Lanka, is generated in much “information and statistics’ on marketing, but it is not adequately and effectively analysis and interpretations to generate “information” that will be useful to “farmers, traders, and rural communities to make their decisions on crop production and marketing. It has not helping farmers to improve their bargaining power at the rural markets, while reducing and controlling the cheating by middlemen and other intermediary agents because of the low level on statistical literacy and skills.

4.2 Upgrading and Policy Priority for Statistical Literacy and skilled: Key statistical agencies are given low priority for the improvement of statistical literacy and there are no policy agenda on their programs. Relevant agencies and general public’s are not more concerned the improvement of the statistical literacy. Owing to the lack of policy priority and day to day upgrading of data systems and other inappropriate involvements has become the leading factor for the failure of statistical information system.

4.3 Unorganized Planning Structure and Standardization: What is lacking in Sri Lanka, however, are data and metadata sharing systems and standards and effective presentation of data. The leading agencies do not have the technical capacity to make the integration of information system and sharing data a reality. DCS has the mandate for all national level statistics while the CBSL is responsible for the handling some economic and social statistics of the country. HARTI is responsible for collecting, analyzing and disseminations of AMIS. These three organizations are collect, analysis and dissemination on food prices and related agricultural market data. Each organization struggles to develop and manage prices and statistical information systems on their own. Even, where technical skills are missing, leadership and vision could make a difference for making progress in systematic data sharing. The key issue is these organizations are not given any attempts to the improvement of statistical literacy and skilled in rural farming communities, particularly food market information system, to better use of day to day life. The actual benefits and remuneration of this AMIS, is not properly receiving to millions of small farmers those who are living in remote rural agricultural areas. The agricultural traders are also getting fewer benefits from the system, since some of the inherited problems and constraints in marketing system. The benefits to farmers are relatively limited. Distributing of marketing information at a grass root level is not adequate to meet the needs of farmers. The information distributing trends to be raw price data often averaged over the country, which is little use to farmers due to lack of statistical literacy and skilled. Therefore, the poor performances are the results of several causes of the problems of production and marketing system that are directly relation to the need on the improvement of statistical literacy and skills in farming and trading communities. Although, the use of marketing information on the some other parties in the country such as government, policy makers, academicians, and specially politicians are significant. The big Challenge faced system is build networks to addressing the gaps and problems in AMIS and the improvement of statistical literacy and skills in Sri Lanka.

4.4 Overcoming Financial Constraints: The dividends of invested capital on statistics collection and dissemination are not receiving the country as a result of those events. Financial constraints affect in two ways. First, it restrains the conducting of new surveys to produce more deliberative statistics that are suitable for the improvement of public statistical literacy. Secondly, it affects the quality of surveys and information system that currently being conducted. Judging by the above experiences in other countries and Sri Lankan case, it is understood that the limited financial resources is one of the leading reason for the implementation of the information system with the challenge of the improvement of the statistical literacy and skills in rural farming and trading communities.



4.5 Public Awareness Programs on Statistics Literacy: Some programs are not providing basic knowledge on statistics literacy, so that the general public is not in a position to make use of vital statistics in their day today life. A limited number of training programs are conducted to improve the skills of individuals involved with data collection and dissemination though it is not sufficient to meet the modern data requirement of the country. It is big question inquire, why Sri Lankan farmers are fail to use of market information? Use of market information by the small frames is very limited, because they cannot use this data for planning or bargaining or any other purpose at the market, due the lack of statistics literacy and skilled. Other limitation of these statistics and data are only few types of prices and production figures which are not properly understanding to them. That information is not enough for making right decisions on what to produce, how to produce, when to produce and where to produce and bargaining to commodities prices. Sri Lankan farmers have to struggle with costs and prices in other countries. Therefore, farmers have need to more compressive, trouble-free and detail information on marketing and production in international markets. Prevailing local marketing information is not enough for making correct decisions in agriculture. Therefore, need of formation of public awareness programs on statistics literacy is urgent need and compulsory.

4.6 International Cooperation for the Improvement on Statistics Literacy: The role of statistics as a key development factor is not obvious for all decision makers in developing countries. Therefore, international organizations have provided strong support for data production while little attention has been paid to use and understanding of data by policy makers and public. Consequently, the core funding of many statistical services is inadequate for organizing data collection for the production basic set of internationally recommended key indicators. Providing technical and financial support, the international organizations can be develops the capacity of government, civil society and media by given training course on statistical literacy and technical assistance.

Section: 5. Conclusion

In conclusion, all professionals, essentially statisticians, economists, agriculturalist, sociologists, politicians and many others in developing countries are facing challenge to properly measure and understand the new global economy in which they heavily involved. Sri Lanka is no exception. As a small country experiences of the improvement of the statistical literacy and skills are the vast problems and challenges in the field of disseminations. Lack of cooperation from respondents, need of upgrading and policy priority for statistical literacy and skilled, unorganized planning structure and standardization, financial and other resources constraints, creation of public awareness programs on statistics literacy, need of international cooperation and data comprehensibility of the disagreement in economic and social statistics are few of the massive challenges for the enhancement of the statistical literacy and skilled. To improve the utility of statistics and their relevance to the Sri Lanka's social and economic development, the key government statistics agencies continuously works to promote statistical literacy in the community. For that, a good understanding of statistical concepts and methodologies and their interpretation is essential to the proper and effective use of official statistics.

Though, it is essential to note that the improvement of literacy rates or eliminating of illiterates is not the ultimate solution for the upgrading of statistical literacy in the developing world. Therefore, an enhancement of literacy rates and removing of illiterates are necessary conditions for an answering to the challenges of educating on statistics, but not sufficient conditions for improving statistical literacy in developing countries. There are many other requirements of education policies, curriculum changes and developments in schools and university levels, public awareness programs, appropriate data and information schemes, organized dissemination system, better rules & regulation arrangement on statistics and country wide excellent communication systems with many additional measures, that are need to the improving statistical literacy in developing countries.