# Addressing development challenges through research: the research environment of the universities and the supporting role of the libraries enabling a positive national contribution.

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## 1. Introduction

It is the task of a Development Economist to analyse the development challenges of Sri Lanka, however I am glad that I was accorded this opportunity to pay my attention to the challenges Sri Lanka faces in reaching the higher global standards of development. I will discuss the development challenges of Sri Lanka, and how research can address these issues briefly. Then I will pay attention to the innovation capacity of Sri Lanka and the issues encountered by our researchers. Finally I will discuss the changing working environment of the researchers and how the university libraries can ease their burden through a shift in the service paradigm.

## 2. Development Challenges encountered by Sri Lanka

Within the context of this paper, I use three international measurements to examine the development challenges encountered by Sri Lanka; 1) the Human Development Index (HDI) of the UNDP, 2) Millennium and SAARC Development Goals (MDGs and SDGs) formulated by the United Nations and the South Asian Association for Regional Co-operation (SAARC), and 3) the Knowledge Economy Index of the World Bank. Some other issues external to these measurements are also briefly highlighted.

The overall HDI rank of Sri Lanka is 73 out of 187 countries and the HDI value is 0.750 which is above the average for the other countries in the high HDI group of countries and the average for South Asian countries. HDI trends from 1980 to 2013 indicates that there is a continuous growth from 1980 to 2013 which is an average annual increase of about 0.84 percent. However, Inequality-adjusted HDI indicates a loss of 14.3 percent due to inequalities country. The Gender Inequality Index rank of Sri Lanka is 75 out of 149 in 2013. This is lower than the average of high HDI group of countries but higher than that of South Asia. The Gender Development Index (GDI) rank is 66 out of 149 countries. Here too, Sri Lanka holds a higher value than that of South Asia and the other high HDI group of countries **(UNDP 2014).**

The second measurement used in this paper to identify the development challenges is the Millennium and SAARC Development Goals. Sri Lanka has achieved thirteen targets but slow in achieving three targets and regressing in two targets **(UN-ESCAP, ADB and UNDP 2013).** The statistical data demonstrate that Sri Lanka has performed reasonable well in achieving the MDGs and SDGs in the region, as a country. However, in-country disparities should not be ignored.

The third measurement used is the Knowledge Economy Index (KEI) and the Knowledge Index (KI) of the World Bank **(KNOEMA 2014).** From 1995 to 2012 the Innovation Index indicates a drop while the Education Index indicates a rise, but the ICT Index indicates a sharp drop and drop while the Economic & Institutional Regime as also dropped. As a consequence, the overall KEI and KI also depicts a drop and the country's rank as a knowledge economy, has dropped to 101 in 2012 from 87$^{th}$ rank in 2000.

According to the above analysis of Sri Lanka's position in the development rankings, it faces the challenge of moving upwards in the human development from its 73$^{rd}$ position globally. As far as MDGs and SDGs are concerned, Sri Lanka encounters the challenge of reaching the targets of child, infant and maternal mortality, regressing primary enrolments and forest cover as a percentage of total land area. We must not forget that the benchmarks set for the MDGs and SDGs are at minimum levels, though we are far above many other countries in the Asia Pacific Region or in the lower middle income group.

Improving the overall KEI and KI of the country is a challenge to be deliberated without delay by improving the four pillars of knowledge.

In addition to these challenges, several other specific challenges could be identified. Our health sector is challenged by the aging population and declining fertility rates. In 2013, Labour Force Participation Rate of Sri Lanka is 53.8 percent of the household population aged 15 years and above. This will further reduce with the aging of the population and reduction in births. Increase in aged-dependents will require more attention on Non-Communicable Diseases (NCDs) which has become the leading cause of mortality in Sri Lanka, not forgetting the Chronic Kidney Disease and other NCDs, youth unemployment is the high at 19.2 percent of the 20-24 years olds **(Central Bank of Sri Lanka 2014).** Mismatch between the supply and demand of labour, aspirations and perceptions of youth, mismatch between their knowledge and skills and the employer requirements and available job opportunities have caused this youth unemployment.

## 3. Research in addressing the development challenges

Research can be classified in different ways, but a classification used by the Department for International Development (DFID), UK **(DFID 2014)** is more appropriate here; 1) research on products and technologies, with a special emphasis on technologies and products which will lead to economic growth, and development of pro-poor products and technologies, 2) research on what works and why? Research that will help understanding the needs and demands of the potential users and inform policy makers in designing interventions and understanding the contexts of development challenges, and 3) research with supporting empirical evidence for product and technology development, and for policy and practice development. It is expected that these three kinds of research will lead to poverty reduction and improved quality of life.

High quality tertiary education cannot be ignored as it is a major contributor to human capital of a country. Growth of a country is not a question of capital accumulation, fertility rates, aid dependency, and stable macroeconomic environment. It is also about strengthening the capacity of the country to assimilate and effectively use knowledge and technology. Growth of an economy does not depend only on their ability to innovate, but rather on their capacity to absorb and effectively use new technologies **Onyeiwu (2011).** As knowledge becomes an increasingly important part of innovation, the university as a knowledge producing and disseminating entity plays a larger role in industrial innovation **(World Bank 2008).** Former Vice Chancellor of the University of Ruhuna, argued that in order for the country to improve its global competitiveness and raise living standards, it must create an entrepreneurial mentality within academic institutions, producing unique and creative minds that possess the ability to produce results by commercializing their findings. Universities must see themselves as part of a larger global enterprise of creating, imparting, applying, and commercializing knowledge **(Senaratne, 2006)**. Under these circumstances the universities of Sri Lanka has a vital role to play in not only carrying out research but also in developing the absorptive and adaptive capacity of the country, in order to address the development challenges.

Nevertheless, the Global Innovation Index **(Dutta, Lanvin, and Wunsch-Vincent 2014)**.which ranks the countries according to their innovative capacities, places Sri Lanka on 105$^{th}$ position out of 143 countries with an innovation score of 29 (the highest being 100 and the lowest being 0). This same Index places Sri Lanka in the 20$^{th}$ place of all lower middle income countries and on 4$^{th}$ place in Central and South Asia. The researcher headcount places us on the 82$^{nd}$ place globally with 248.7 researcher per million people. In gross tertiary enrollment Sri Lanka is ranked 94$^{th}$ out of 143 countries with a score of 17.0, and with the number of science and engineering graduates we are ranked 72$^{nd}$ with a score of 16.7. Gross expenditure on R & D as a percentage of GDP has placed us on 93$^{rd}$ position with a score of 0.2. Our innovative efficiency ratio is at 0.9 which has placed Sri Lanka on 17$^{th}$ position globally. However, in 2013, The Global Innovation Index placed Sri Lanka on 98$^{th}$ position out of 142 countries with a score of 30.4 and within one year we have been pushed seven places down the index.

## 4. Research sector of the Sri Lankan Universities

The handfulof researchers in the university sector face a wide range of obstacles. Inadequate access to national level data sets and previous research in the absence of a national research repository, lack of subscription to journals and other databases, lack of awareness about the open access resources, and poor dissemination of research outputs. Further, lack of funding, inadequate staff (in quality and quantity) lack of institutional guidelines (i.e. in financial regulations), lack of infrastructure (libraries, laboratories, computer software and equipment), institutional regulations which hinder the research process, weak leadership and guidance, lack of research forums and incentives and lack of a research culture adds to the frustrations of the researchers. In addition, "thousands of valuable findings in many disciplines that could have given birth to new enterprises promoting industrial growth and economic development in the country, are gathering dust on the shelves of libraries" (Senaratne 2006), because they lack the expertise and a mechanism to commercialise their research findings. Despite these challenges, Sri Lankan universities are fortunate to have a small percentage of world class researchers. It is difficult to comprehend how they keep abreast with their global counterparts, as, much has not been published about their difficulties, but it is worthy to pay attention to the evolving researcher-behaviour in the global context.

As a consequence of increasing e-research, multidisciplinary nature of research, cross-disciplinary and cross- institutional collaborations, and the massive scale increases in the research output in digital form is changing the work environment of the researchers. Information-seeking and retrieval is increasingly carried out by the researchers bypassing the library. Instead of searching the card catalogues or even the online catalogues, they now turn to online discovery tools. However, frustrations are not absent for the researchers as accessing the actual resources has become more daunting than discovering them. . Instead of depending on Inter Library Loans they tend to approach the authors directly to obtain articles, or use informal communications and memberships of professional bodies to access material. In disseminating the research output and collaborating they turn more and more towards social networking. Working in isolation from the library has decreased the visits to the library which has let to underutilization of the other services offered by the library. Although any empirical evidence is absent, the behaviour of the Sri Lankan university researchers cannot be any different. What then is the role of the library in the electronic age where almost anything is delivered to the desktop of the researchers?

So far we have been concerned with serving the teaching/learning process through mainly print-based services. In order to bridge the present gap between the researchers and library, the service paradigm need to move from print to electronic with a special emphasis on researcher needs. Keeping the research life-cycle (generating new research ideas and research proposals, securing funding, carrying out the research, and dissemination of outcomes, in mind the library must offer new information services to support researchers. Expanding access via digital repositories and mining open access material, data management and curation, provision of resource discovery tools, offering physical space not only quiet work areas but also learning commons for collaborative work, introduction of information skills for the needy, digitizing special collections to be offered across the intranet, provide guidance on citation, plagiarism, and copyright, providing support with the journal impact factors and indexing services, are some of the many services that could be offered through the university libraries to help the researchers. I suggest something similar to the Research Information Network in the UK be established in each university library to support the researchers. In this endeavor the librarians' already available expertise and the rich collections will need to be combined with updated knowledge and skills with new services, which I would like to expand in a future forum of librarians.

## 5. Conclusion

Sri Lanka, has reached high human development than the average of lower middle income and SAARC countries. Yet, there are many pressing issues that need to be addressed urgently. Other than satisfying the basic human needs, there is a critical need to compete internationally to progress as a knowledge economy. Research plays a vital role in addressing these challenges, but Sri Lanka is yet to achieve high standards as far its innovations are concerned. The handful of excellent researchers, from the university sector encounter a wide range of constraints with which they have to struggle to accomplish their research. University libraries, which caters more to the teaching and learning at present has a huge potential to support the researchers with many of their research information needs. For this the libraries will have to augment their services with more a virtual library environment to meet the needs of the researcher who does not want to visit the library anymore. Adapting this new service paradigm will ease the burdens of researchers to a considerable extent helping them to improve their research output in order to address the development challenges of the country.

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