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Home High demand for applied statisticians in the world

### High demand for applied statisticians in the world

Thursday, January 5, 2017 - 01:00 Print Edition



There has been a huge demand for Applied Statisticians in the world, specially in developed countries like the USA and Sri Lanka too should follow this trend said, Prof.Sarath Peiris, Fellow of the Institute of Applied Statistics Sri Lanka (IASSL), Professor in Applied Statistics and Head of the Mathematics Department of the Engineering Faculty of the Moratuwa University.

"The availability of massive quantities of data coupled with enormous increase in computation power for relatively low cost has led to the creation of a whole new activity called, "data mining, data science, big data analysis".

"I think that the data revolution has been started. These data sets are complex and need to discover their hidden properties."

Some statisticians have stated that 'the sexy job in future' will be the Applied Statistician and data analysis and communicate the results going to be an important skill in the next few decades.

"Applied Statisticians should be excited and need to play an important role in such data. Statistical techniques are not data mining explicity, but they were being used long before the term data mining, data science were coined to apply to business applications."

"From the users' perspective, it will be faced with a conscious choice when solving a "data mining" problem as to whether to attack it with statistical data mining methods or other data mining techniques."

"Almost all methods used in data mining, data science, big data analysis are related to methods developed in statistics. Therefore applied statisticians have a major role to play in data science or big data analysis."

Peiris stressed that computer science experts cannot handle those data without the guidance of applied statisticians.

"Due to the electronic world, billions of transactions are carried out daily in many organisations and such data are accumulating in very large data bases under data structures. How to handle data, which pattern can be found in data, what do they mean for others, how can data be looked at,

what methods can be used, are the main expectations from applied statisticians."

"In Sri Lanka data science, data mining, are dominated by computer science experts, but my idea is that it is not a good trend. The applied statisticians must get involved in these problems."

Most government departments, private organisations and agencies hire applied statisticians to evaluate population, demographic and economic measurements. Many other environmental, scientific and agricultural agencies hire applied statisticians for similar type of work in their

respective fields. In Sri Lanka almost all the government departments should have a statistical unit with an experienced applied statistician. All government hospitals should recruit an applied statistician.

The United Nations has now declared 17 Sustainable Development Goals (SDGs) by replacing 8 Millennium Development Goals (MDGs) from January 2016. The 17 SDGs have 169 targets to be achieved by 2030.

"We do not have sufficient data or a proper mechanism to collect the necessary data and as a result there will be plenty of data gaps in computation such as targets. Thus Applied Statisticians should be excited and ready to play an important role in developing new SDGs."

Demand areas

Commenting on some of the demand areas for Applied Statisticians he pointed out that big data can arise in all fields and from a big data analysis point of view applied statisticians are required in almost all fields.

"Nevertheless, statistics are an essential part in medical science and it provides generalisation for the public to better understand their risks for different diseases. Applied statisticians in the pharmaceutical companies are the key players in drug development procedure in the developed

countries such as the Food and Drug Administration (FDA) procedure is totally handled by applied statisticians."

"However, in Sri Lanka such statistical procedures are not practiced even though we produce some drugs."

There are massive data in the Department of Census and Statistics (DCS), which have not been utilised effectively.

"I suggest once again that DCS should establish a Statistical Research unit with experienced Applied Statisticians. The Applied Statisticians can produce marvellous information from such data which should correctly conveyed to the decision makers."

### What is statistics?

In this world, everything is relative and nothing is absolute, but varying. No phenomenon can be explained perfectly. Statistics is the only subject which teaches us how to deal the variability in a scientificmanner.

That is why statistics has been included as a course module/s in all degree programs in universities. The two important entities in statistics are population and sample. The statistics are generated from a sample which is drawn from a particular population.

"For example, mean time to recover from a drug. These statistics generated from a sample have wealth of information. I would say those statistics are 'valuable and beautiful'."

### IASSL set up to support statisticians

In 1999 fifteen statisticians including myself formed the Association of Applied Statistics Sri Lanka. (IASSL) The first meeting was held in the PGIA, University of Peradeniya. This has been incorporated by an Act of Parliament. "We have about 400 members now".

IASSL, the only professional organisation committed to promote and to assist the advancement of statistics for the furtherance of research, planning, development, education and training in Sri Lanka was set up.

This was followed up with an 'Award of Fellowship' in 2012 and the first fellowship was awarded went to Prof. R O Thattil, Emeritus Professor in Biometry at the University of Peradeniya.

Since then another three fellowships were awarded. The selected nominee must have an established reputation; published papers, significant contribution to Applied Statistics and the IASSL.

Asked how he could help engineering students to learn statistical skills he said that teaching statistics is a challenging task.

"It is much easier to teach theory of statistics to engineering students as they have a good mathematical background. The challenge is to statistical concepts and use of statistics to solve problems. I use various examples depending on the applications in particularly the engineering applications and explain the statistical interpretation."

Students are advised about statistical thinking on how to learn about the client's problem and how to meet the client's requirements and interests. Students are advised to write a concise summary on the analysis without dominating technical details so that conclusions can be understood without statistical knowledge. "Furthermore, we have initiated statistical advisory services for the university community."

Steps to popularise Applied Statistics

Most of the non-statisticians can easily handle statistical software because software has made so easy to use. But without a clear idea on the statistical concept the outputs generated from software cannot be interpreted. To understand the concept correctly you need to understand the

theories in statistics in a simple manner, but study and proof of theorems is not required. Furthermore, there are many non-statistics graduates who want to enhance their knowledge in applied statistics.

In order to fill this gap, I have started a Post Graduate Diploma and Master of Science in Business Statistics in 2010 in the University of Moratuwa. This course is open for any graduates who have done some statistics courses. "We teach statistics theory and practicals at the same

time and the students have more opportunities to analyse real data using statistical software. Furthermore, I used to conduct various training courses on data analysis from time to time at the IASSL".

Advice for applied statisticians

If one wants to be Applied Statistician they should be able to (i) understand theoretical aspect in statistics, (ii) understand statistical concepts correctly, (iii) look at data and its quality extensively, (iv) formulate the statistical problems, (iv) analyse data using correct statistical methods and (iv) summarise the findings in an effective manner.

Prof. Sarath Peiris and old boy of Egodauyana Maha Vidyalaya and Moratu Maha Vidyalaya, Moratuwa and graduated in 1979 from the University of Colombo and later became a Statistician at the Coconut Research Institute (CRI), Lunuwila in 1980 and later became the Principal Statistician and Head of the Biometry Division. Later he joined the Faculty of Engineering, University of Moratuwa and became the Professor in Applied Statistics in 2009. (SS)

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