SAS AND STATISTICAL TRAINING AT STATISTICS SA: A PRACTICAL TOOL IN GOVERNMENT STATISTICS.

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Statistics South Africa is the official supplier of statistics for the South African government. It supplies various types of statistics to government departments, industry, financial houses as well as economic and developmental planners. Being an organisation where many subject experts are employed and where transfer of knowledge takes place, it is only natural to see that the quality of the organisation lies in its people and in the continual development of people's skills. SAS is the most widely used data management and statistical tool, especially in social and economic statistics. Training is provided as part of a well defined development plan that each employee has in terms of their position. Most of the training deals with data management and data manipulation as well as statistical analysis. It is intended that as people learn more that people will want to know more and the stage has been reached where features such as SQL and Macro Language amongst others are being trained.

Training of Statistics can therefore take place with SAS being used as an analytical tool. Products such as SAS Analyst and Enterprise Guide allow the instructor to practically demonstrate the application of statistical techniques. Various different statistical procedures can be performed from simple descriptive statistics to complex inferential statistical procedures like data mining and time series analysis. Training of this nature goes hand in hand very effectively with the more theoretical type of statistical tuition that someone might receive elsewhere. However, if a trainee is able to see the link between the theoretical approach and the practical application thereof then everything becomes clearer, it stimulates the desire to learn more and everything falls into place.
Skills development in South Africa is very important to the extent that legislation has enabled Statistics SA to be part of a Public Sector Education & Training Authority (PSETA). Through this Stats SA has proposed to create SAS learnerships which would allow individuals to learn and apply knowledge gained by SAS in the workplace. Hence, this paper aims to show the value that the training and usage of SAS has to an organisation like Statistics SA and what new developments and initiatives can be pursued to further meet this aim.

INTRODUCTION

The republic of South Africa is located at the foot of Africa and has an area of roughly 1 200 km^2 and with an approximate population of 48 000 000. South Africa is further divided into nine provinces, each with its own provincial legislature. Statistics South Africa (Stats SA) is a national government department whose task it is to collect, process, analyse and disseminate official statistics in support of economic growth, development and democracy.

Legislative mandate

In the Statistics Act (6 of 1999), the role of the agency is defined as informing organs of state, businesses, other organisations and the general public in planning, decision making, monitoring and assessment of policies. Further, Stats SA is to:

- promote co-ordination among statistical producers in South Africa in order to advance the quality, consistency, comparability and optimum use of official statistics and to avoid unnecessary duplication;
- provide statistical advice to government departments; and
- liase with the statistical agencies of other countries.

The Act also states that Stats SA shall protect the identity of the respondents and the information they have provided, and that the statistics shall be:

- relevant, accurate, reliable and timeous;
- objective and comprehensive;

- compiled, reported and documented in a scientific and transparent manner;
- disseminated impartially and accessibly;
- produced in accordance with appropriate national and international standards and classific ations; and
- sensitive to distribution by gender, disability, region and similar socio-economic features.

CORE AND SUPPORT ACTIVITIES

Core activities

In accordance with its mandate Stats SA produces:

- official economic statistics on various aspects of the economy derived from more than a hundred regular surveys of information from companies, enabling compilation of indices such as the producer and consumer price indices (PPI and CPI), and trends in employment, volumes and prices in various sectors;
- national and government accounts including the gross domestic product (GDP), supply and use tables, and social-accounting matrices for planning;
- social, employment and demographic statistics based on regular household surveys and a five-yearly population census;
- vital statistics, for example on births and deaths, and other statistics such as tourism, compiled from administrative records; and
- analyses of the demographic, social and economic data that have been gathered;

A further core activity of the department is the development of a national statistics system which will coordinate the production of official statistics and the production of a set of indicators of national performance.

Support activities

Support activities consist of both statistical and management support functions. Statistical support activities include:

- spatial referencing and analysis through geographic information system;
- publishing and promotion of all statistical information including a user information service;
- maintenance of a register of businesses which forms the sampling frame for economic surveys;
- information technology to ensure enhancement of data through the application of information and communication technology
- development of statistical quality and methodology concepts for application in the various survey areas; and
- integrative and analytical reports for enhanced access to statistical information.

SAS TRAINING AND USAGE AT STATS SA

Statistics SA being an organisation where many subject experts are employed and where transfer of knowledge takes place, it is only natural to see that the quality of the organisation lies in its people and the continued development of people's skills. SAS is the most widely used data management and statistical tool that is used especially in the social and economic statistics.

Training is provided as part of a well defined personal development plan that each employee has in terms of their position. Most of the training deals with data management and data manipulation as well as statistical analysis. At the moment the Programming One and Two, SQL, Macro, Analyst, Insight and Assist courses are being presented. It is very encouraging to note that as users have begun to become comfortable with the various courses offered they have started to learn about more advanced techniques which we are now in the process of planning training for. Advanced technical competence is thus something that is being strived for with all users of SAS.

As far as the actual usage of SAS is concerned most departments at Statistics South Africa use SAS for tabulation of the data that is dealt with. The household surveys department who

conducts various social surveys furthermore uses it for drawing of samples by means of the *proc surveyselect* and *proc surveymeans* procedures. These proc steps are also used in order to develop weights and have been very much welcomed since Version 8 was released because it meant that the manual development of weights was now something of the past. Surveys used include the October Household Survey, Social Development Indicator Survey and the Labour Force Survey.

- The Local government department uses SAS for creating various programs which are re-used in order to edit financial data, especially income and expenditure in the public sector, municipalities and tertiary institutions.
- The Labour department draws samples of employment and wages from their various surveys for publishing purposes.
- The Primary and Secondary Sector as well as the Tertiary and Transport Sector use SAS extensively to determine seasonal and trend figures for releases of mining, manufacturing, the building industry and electricity consumption on the one hand and analysis of movement of goods from retailers and suppliers to consumers on the other.
- Migration and fertility analysis on data supplied by the Department of Home Affairs is done by the Vital Statistics components. Tourism statistics are also compiled by this unit.
- Finally, the Analysis department does some data mining of various surveys, most importantly the post-enumeration survey which follows the census in order to measure the latter's effectiveness.

It is clear from the above then that the variety of tasks are well served by SAS but, that the power of SAS is something that is highly under utilised. Reasons for this may be that long term mind sets have developed where tools like SAS are used for a specific purpose only and no review of technology available has taken place.

SKILLS DEVELOPMENT AND LEARNERSHIPS IN SAS AT STATISTICS SA

Skills training in general has been a problem in South Africa. There has been too little training in this regard and too much emphasis was previously placed on academic endeavours. Theory and practice were thus separated and gaining practical experience in your line of work was something that was left up to the individual or his employer. Coupled to this was the legacy of discrimination that the South Africa's past carries whereby opportunities for higher learning were given to the privileged few. As a result of all the above low levels of general education were found amongst South Africans which was not conducive to the labour market.

With the advent of democracy in 1994, South Africa faced various challenges. One of those which is probably the most important is that of globalisation whereby international competitiveness with regards to skills, technology and economic prospects are determinant as to whether one can attract investment and trade. All this means that economies are changing rapidly to a type of economy that places an emphasis on effectivity, thereby focussing on making trade and investment attractive for foreigners. This means that organisations need to be more flexible in that they need to perform more tasks than before and develop the skills of individuals in instances where they previously did not. Employees therefore have to be multi-skilled in order to perform a variety of tasks. Employees should be able to move between components inside an organisation as well as taking their skills from one organisation to another as well as from one sector to another.

Learnerships are work-based routes to earning a qualification supported by institutional learning. This means that they include a blend of theory and practice. They may seem similar to apprenticeships but the difference will be that they are competency based and not time based and that the content of these learnerships will be recognised by industry's SETA's and by the SAQA unlike apprenticeship which varied from employer to employer. Furthermore learnerships will cover all areas of work and not just the traditional blue collar trades.

At Statistics South Africa, we are in the process of liasing with the SAS Institute in South Africa on forming at least two learnerships. One will be aimed at statisticians and analysts and the

other at economists who use SAS to make calculations on trends and forecasting as well as calculating economic indicators.

As was highlighted earlier in this paper the former group uses SAS more to capture data and then do some analysis and tabulation with the view to producing a credible publication. This learnership will therefore guide the learner through the use of various SAS modules in line with the everyday content of his work so that the application of SAS can be maximised. The latter group also uses SAS but for a much different purpose. Economists at Stats SA are more concerned in looking at pre-prepared data sets and trying to determine seasonal or non-seasonal trends as well as the combining of various data sets as can be done in *PROC SQL*.

These two learnerships are directed at new users and hence more experienced users of SAS working with matrices, analysis, sampling and the like would not be seen as the likely targets of such a learnership.

The SAS education programme is a very well developed program with careful designed courses designed in Germany by the SAS EMEA office.