

SPSS as a means for Scientific Analysis in Social Science Research

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Abstract: *SPSS (Statistical Package for the Social Sciences) is an innovative computerized programming for statistical analysis, specially developed for the social sciences research. Now a day, it is widely used particularly in the huge data analysis. SPSS is a software through which researcher can understand the human behavior, the role and influence of the organization, etc. including the analytic thinking of several indicators of society in a scientific way. Currently, this software is widely exercised by the business hubs, market analysis agencies, and educational institutions and even by the government itself. Simply, we can aver that it assists the researcher in concerning to the documentation of the data. It is a full package software encompasses all forms of statistical analysis which is efficaciously able to convert the quantitative data to qualitative analysis. This present paper is an effort to understand the usability, difficulties and shortcomings of the SPSS software in the social science research.*

Keywords: *SPSS, Social Science, Research, Data Analysis*

I. INTRODUCTION

Research means the aggregation of information from the field, experiments or through observations; and a solution to the various problems in a systematic manner in various sectors. Now a day, computerization is playing a vital role, even in the research in social sciences. It becomes now as an indispensable means in research. Computer helps the researcher from searching for literature to the thesis writing. Now a day, SPSS (Statistical Package for the Social Sciences) help the social scientists in research to understand the complex nature and behavior of human and social organizations. 'This software is a full pack which enables the researchers to obtain statistics from simple descriptive numbers to the complex statics along with the provision of presentation of data in histograms, scatter plots, and other ways' (Bala. Jyoti, 2016). The applied math package popularly known as the SPSS provides descriptive and inferential statistics on the data gathered by the researcher from survey, experiments or through the observation. This is found as user friendly and capable to analysis a huge data easily.

II. METHODOLOGY

This is a descriptive as well as an analytical paper. The paper is prepared on the basis of the experiment and on the secondary sources. For the secondary sources, based on the available books, articles, seminar papers etc. related to the topic. Considering the primary sources totally depends on the

experiment and observation gathered after the exercise of the SPSS software in diverse tasks and research works. In this paper, an attempt is made to find out the pros and cons of the SPSS and its usability in social science research. This paper is limited with the analysis of the relevance of the SPSS package in social science research.

III. SPSS: AS AN ANALYTICAL TOOLS

SPSS is a software used for the statistical analytical specially developed for the social science research. 'This software was acquired for the first time in 1968 namely as the SPSS (Statistical Package for the Social Sciences) by Norman H. Nie, Dale H. Bent and C. Hadlai Hull'. From the version 10 of the software in 1983, data file was produced in such a way that it can analysis multiple records at a time. Now it can run in, MAC, Linux and Windows. Currently it is widely used by various research agencies in Australia and by the Australian universities (Devare. Suresh, 2015). It is developed by IBM and after 2015, all the versions named as 'IBM SPSS Statistics (Bala. Jyoti, 2016). This software is developed for the social sciences research, which help to read data collected through the questionnaires from the field and provide platform for a wide range of statistical analysis with descriptive inputs.

IV. ROLE OF SPSS IN SOCIAL SCIENCE RESEARCH

Usually in the research, conclusion is written on the basis of the hypothesis testing. Hypothesis testing means the analysis of the information garnered from the field with the pre assumed statements on conclusion. For this, in every research, maximum data are collected from the field in social sciences to draw a tangible and errorless conclusion. So to minimize the burden and technical error in analyzing with the large quantum of data, computerized programming is used. In this milieu, SPSS is found as widely used software in social sciences.

This software is easy to use, but a minimum knowledge of SPSS is required. There is 'tutorial file' in all the SPSS package, which is very helpful for the researcher. All the efforts of the research or the success of the research depends on the quality of data analysis.

Statistical tools of SPSS

There are various statistical tools available in the SPSS, which are very helpful for the analysis of different type of data (Bala. Jyoti, 2016). These are like:

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Table on the types and tools of statistical analysis

Types of Statistics	Tools
Descriptive	Descriptive, Explore, Cross tabulation, Descriptive Statistics, Ratio
Identifying groups	Factor analysis, cluster analysis (two-step, K-means, hierarchical)
Numerical outcomes	Linear regression
Bivariate	Means, t-test, ANOVA, Correlation (bivariate, partial, distances), Nonparametric tests.

Table 1. Types and Tools of the SPSS statistical analysis

Besides these, there is a data management system for enormous information. These are like the data documentation including the file reshaping, creating derive data, case selection system etc.

This software required minimum computer knowledge. But significantly the tone and genuineness of the analysis depends on the profundity of knowledge of the researcher. The researcher should have a clear design about the research and should have the plan, what to do with the data for analysis. SPSS starts with the entering of data in the software with a set of variables. These variables later create cases, which in reality reflecting the answers according to the questionnaire set for the field survey in social science research. There are various types of variables in the in the social science research. These are like: Dependent variables, Independent variables, Intervening variable, Moderator variable.

There are some of the common statistical analyses used in the social science research on the basis of the objectives of the research through SPSS (Puteh, Fadilah, 2017). These are like:

1. When the researcher attempts to analysis the impact of the differences between the two groups of the same variable, then he/she can use ‘Independent t-test analysis’ or ‘Mann-Whitney test analysis’ through SPSS.
2. When the researcher tries to find out the differences among more than two groups of the same variable, then he/she can use ‘ANOVA analysis’ or ‘Wallis test analysis’.
3. When the researcher uses to measure the importance of the differences between more than two different groups towards more than one variable, then he/she can use the tools of ‘MANOVA analysis’.
4. There is a ‘Correlation analysis’ and ‘Rank Correlation analysis tools for the analysis of the importance of the relationship between two interested variables.
5. The SPSS provides the ‘Multiple Linear Regression’ tools for the analysis of the fundamental and effect connection between a set of independent variables paired with one dependent variable.
6. The researcher can use the ‘Logistic Regression analysis’ or ‘Multinomial Regression analysis’ to look at the fundamental and effective connection between a set of independent variables.
7. The ‘Exploratory Factor Analysis’ tools of SPSS can be used for modification or rebuild or to verify the variables’ arrangement that reflect the same response.

Scales of Measurement of the variables

Following are the some of the measurement usually used in the social science research:

The ‘Nominal Scale’ which means no value, no raking like the colors, gender, etc. The categories of this kind of measurement are like the race, village, district, marital status etc.

Another type of the measurement of scale is ‘Ordinal scale’. This measurement systematized the data from the highest to the lowest. I.e. the size of the population, ages of the citizens etc.

‘Interval scale’ is another type of measurement of SPSS. In this process a number is assigned to the variables. Significantly, researcher can use the number zero (0) to identify the variable, which also has no value in the analysis. There is another scale which is known as the ‘Ratio Scale’ Measurement. Under this scale researcher can use zero (0) to identify the variable. But here, there is a difference with the ‘Interval scale’. In this scale, ‘zero’ has a value. I.e. if the respondent is not getting any benefit from the government’s schemes, that can be identified as ‘zero’, which means a value for the analysis.

Although the solid analysis is depending on the basis of how the researcher have depth knowledge of his/her research. The researcher has to be very clear about what measurement should be used according to the variables, research design and methodology.

SPSS not only analysis the data, it also present output. Through this software, analysis can be presented in the form of graph, charts, diagram, etc. There is system of output files, namely ‘output viewer’, where all the results of the analysis are presented in different forms according to the instruction of the operator.

V. ADVANTAGES OF THE USE OF SPSS

SPSS is a computer programming software developed for the quantitative analysis in the social science research. It has different tools for the statistical analysis. It is really useful for the analysis of the large data file. The huge data-based research like election results, census results etc can be easily done through this research.

SPSS provides quick analysis of the data. Only time-consuming portion of the software is the data entry procedure. But after that, easily analysis can be done by the researcher. The student pack of SPSS, provides various analytical functions for the researcher. It contains the normal descriptive analysis to the advance complex analysis.

This software utilizes the proprietary 4GL command syntax language (Bala, Jyoti, 2016). The benefit of the language is that it aids in simplifying and analyzing the complex information. Because of this language command many shortcuts like ‘copy’, ‘paste’ etc. button are there. Significantly the result of the analysis is very fast. Within a few second, software can analysis a huge data file.

This software is user-friendly. While researcher is writing the thesis or research report, SPSS provides the facilities to directly export the analysis (output) to a Word file, PDF, Excel sheet, etc. there is another significant feature is there, Researcher can convert their graphical analysis report into JPG, PNG, BMP etc. format.



VI. LIMITATIONS

Price of the SPSS software is very high. At most of the time researcher cannot afford to purchase the software. Its free version is useable, but it experiences many more limitations with a limited day.

This software needs minimum basic knowledge on statistical or mathematic. Sometime it's become as a barrier for the researcher while using the SPSS. It is also found in many times difficult to start an analysis without the help of the expert on statistics. This has happened due to bankruptcy of the knowledge on the statistic among the researcher. Even it is found that still many disciplines of the social sciences research yet not using this software. They are still depending on excel etc.

This software purely has facilities to analysis the quantitative data. There is no scope for the analysis of the qualitative data. As in social science research, many more questions are usually asked to the respondent to know their views. But this kind of responses cannot be analysis through the SPSS software.

VII. RECOMMENDATIONS

All the educational and research institutions should ensure the accessibility of the SPSS software. There should be training programs in all the research institutions on the SPSS concerning how to use in the research. As the cost of the software is overly gamey, hence the availability of this software should be ascertained by the institutions itself.

There should be a free version for the registered researcher under the university and valued research institutions with a minimum limitation. Or the price of the SPSS software for the registered researcher should be less than the ordinary people or institution, etc. In this case, the government also can provide the SPSS software to the researcher at a subsidized price.

As in most of the time, social science research is using the descriptive analysis rather than the quantitative analysis. So, SPSS software should have the provision to analysis the descriptive responses of the respondents in its programming. There may be a coding system in the software for the analysis of the descriptive data.

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