Chapter 5

Political Statistical Process Control (SCPP)

5.1- Prologue - The use of Statistical for controlling Political-solution task is by no means new and lies at the heart of the modern science of quality control.
In a normal task control system the conformance of the political solution to specification is measured. The significant feature of SCPP is that it is not constrained to only measuring conformance. It is intended to lead to action on items which are within specification. The aim is to minimize variability by controlling the process and consequently to achieve continuous Political-solution quality improvement. SCPP is therefore an ideal tool for use in the 'pursuit of quality'.
The use and application of Statistical in Political-enterprise has increased considerably in recent years. The reason for this development is that political management has discovered, perhaps again, that Statistical is a powerful tool which can used be in the drive towards solution ability and quality improvement. The latter are found in all aspects of Political enterprise such as variability in:

- The number of items solve in a month.
- The number of items received in a week.
- The number of solve per day carried out by the engineering department.
- The number of operating hours of computer system.
- Political-solution characteristics due to measuring process.
- Outcome of experiments.

The list-above indicates that Statistical can make a contribution to every department in a Political-centre.

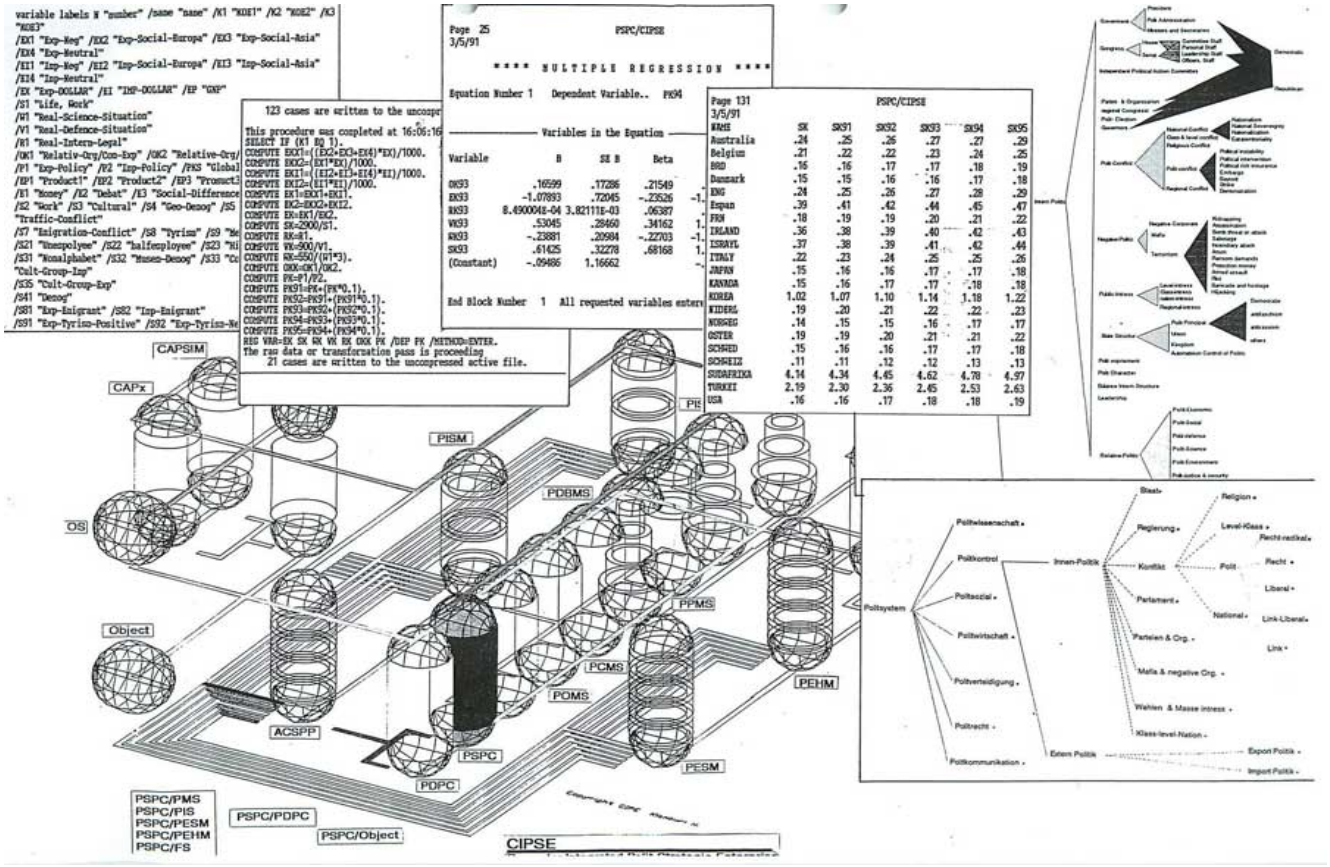

FIG.5.1. SHOWS POLITICAL STATISTICALAL ANALYSIS AND CONTROL PROCESS STATION AND INTERFACES BETWEEN CIPSE STATIONS. THE PICTURE CONSISTS OF FOLLOWING ELEMENTS:
1- POLITICAL STATISTICAL ANALYSIS
2- POLITICAL MODEL STRUCTURE
3- POLITICAL STATISTICAL PROGRAMMING
4- OUTPUT AS A GRAPHIC REPRENTATION
5- MENU AND INTERFACES WITH OTHER CIPSE STATIONS (FOR EXAMPLE STATISTICAL DATABASE, COMMUNICATION OPERATION RESEARCH AND ETC.)

5.2- List of Functions of Political Statistical Process Control (SCPP):

- Building Statistical hierarchy, tree and model
- Make Political Statistical flowchart and diagrams
- Make Political Statistical-program
- Make Political Statistical-shells
- Describe relationship between Statistical analysis and other analysis.

5.3- Basic Definitions in SCPP:

Statistical Hierarchy - A Statistical hierarchy is a system of Political information from political object that ranked one above the other. In CCSPP knowledge hierarchy includes in a sending order, feature values, complex Political-feature values, -subclasses, -classes, categories, -subcategories, -subsystem, and Politic as a total system.

Useful in achieving process stability and improving capability through the reduction of variability. SCPP can be applied to any process. SCPP seven major tools are:

- Histogram
- Check sheet
- Pareto chart
- Cause and effect diagram
- Defect concentration diagram'
- Scatter diagram
- Control chart.

While this tools, often called "the magnificent seven" are an important part of SCPP, they comprise only its technical aspects. SCPP is an attitude - a desire of all individuals in a Political organization for continuous improvement in quality and productivity. This attitude is vest developed when management becomes involved in an ongoing quality-improvement process. Once this attitude is established, routine application of the magnificent seven becomes part of usual manner of doing policy, and the Political organization is well on its way to achieving its quality improvement objectives.

Statistical Methods - The following methods are often used in CCSPP Statistical analysis:

- Regression analysis, for model building and prediction.
- Factor analysis, to obtain a parsimonious Description of
- A complex database.
- Univariate and multivariate analysis or variance, to test hypotheses and search for interactions.
- Discriminant analysis, to find hyper planers that optimally separate groups, typically used in screens, toxicology, and Political metrics.
- Time-series analysis, particularly the fast Fourier transform (FFT), to demonstrate relationships between serial observations, clustering and pattern recognition methods, to find groups (used not infrequently in image analysis).

5.5- Regression - Procedure REGRESSION calculate multiple regression equations and associated Statistic and plots. Several methods for selecting variables into the equation are available. Statistic for analyzing residuals and influential observations are also available. Several types of plots, including partial residual plots, can be displayed.

The minimum specification for REGRESSION is a list of variables from which a correlation matrix is computed (VARIABLES), a dependent variable which beings building of an equation (DEPENDENT), and a method for selecting blocks of independent variables for the equation (METHOD). For each block of variables selected, the default display includes Statistic on the equation (including .... and analysis of variance); on the variables in the equation (including regression coefficient), and on variables being considered that are not in the equation. The default display uses the width specified on SET. By default, all cases in the VARIABLES subcommand are used to compute the correlation matrix on which the regression equations are based. The default equations include a constant.
Regression is merely a means of refining data collected on numbers of countries, on a historical basis, or as incomes change. By using data based on the historical relationship between demand for a given product and some economic indicator, or between demand and some economic indicator in a given time period, a firm may construct a regression equation that shows the demand based on a level of the indicator. This technique allows an amount of

FIG. 5-2 IS A EXAMPLE FOR POLITCAL HIERARCHY.

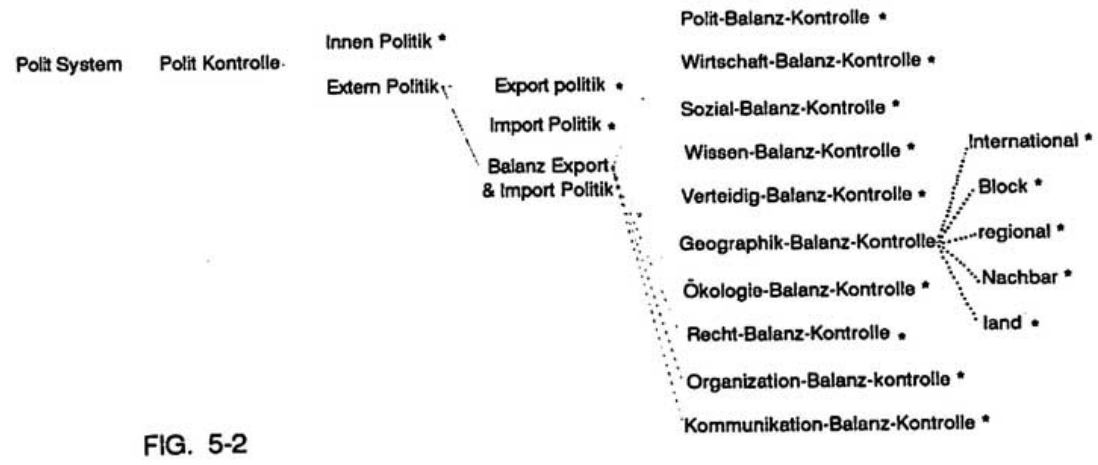

FIG. 5-2

FIG.5.2. IS AN EXAMPLE FOR A SCPP HIERARCHY.

Statistical Model - The components of the system, appearing at the Statistical level, are basically the objects. In this scale these are constituents without internal structure but with visible characteristic features, called attributes.

Optimizing a Process In a characterization experiment *I* we are usually interested in determining which process variables affect the response. A logical next step is to optimize, that is, to determine the, region in the important factors that lead to the best possible response.

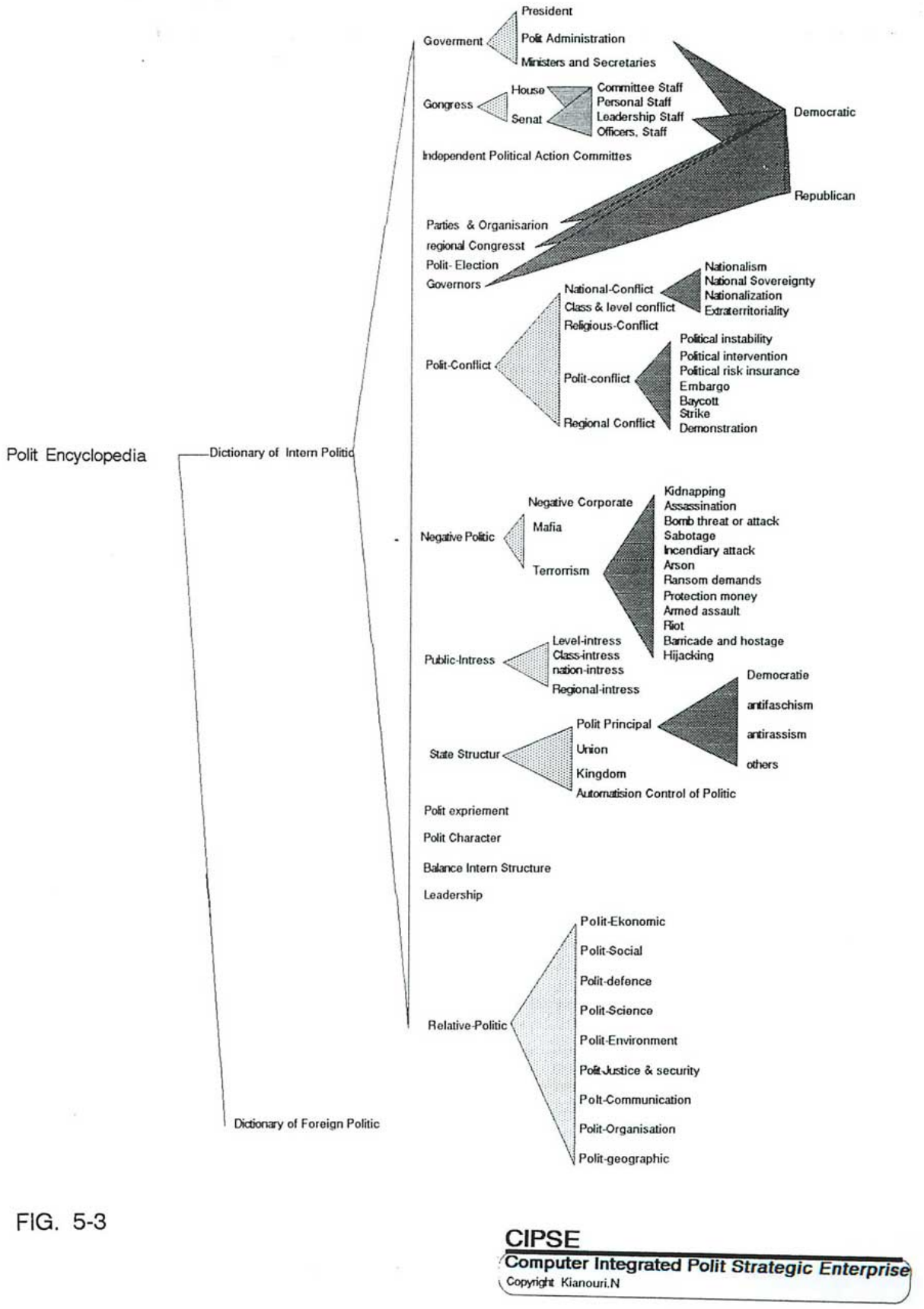

FIG.5.3. IS AN EXAMPLE FOR A SCPP HIERARCHY.

5.4- Methods Useful in SCPP - Experimentation is the heart of any scientific and engineering activity. And Statistical deals with techniques for designing experiments, collecting and analyzing data, data drawing conclusions from the experimental data. The computer can be a valuable tool in Statisticanalysis.

Statistical is a science that deals with the collection, classification, analysis, and interpretation of numerical facts or data, and by using mathematical theories of probability, identifies order and regularity among aggregates of more or less disparate elements.

Traditionally, Political Statistic analysis of large quantities of Political data has been a time consuming, error-prone task. Because of the computer's speed and accuracy, analyzing data was one of its earliest uses.

Statistical is the art of making decisions about a political process based on an analysis of the information contained in a sample from that process. Statistic methods play a vital role in quality improvement. They provide the principal means by which a political solution is sampled, tested, and evaluated, and the information in those data sis used to control and improve the enterprising process. Further more, Statistical is the language in which development engineers, enterprising, management, and other functional components of the policy communicate about quality.

If a political solution is to meet the Political user's fitness for use criteria, generally it should be produced by a process that is stable or repeatable. That is, it must be capable or operating with little variability around the target or nominal dimensions of the Political solution's quality characteristics. Political Statistic process control (SCPP) is a powerful collection of problem-solving tools consumption that is not directly contributable to changes in the indicator to be taken into consideration. In further allows for the determination of the degree of correlation between the independence and dependent variables.

MORE

**** MULTIPLE REGRESSION ****

Equation Number 1 Dependent Variable.. PK91

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
PK7	-.81975	.59548	-.45599	-1.377	.1919
P1	.03799	.01256	.50196	3.025	.0098
PK6	.22413	.88675	.05520	.253	.8044
P2	-.01366	8.13089E-03	-.40882	-1.680	.1167
PK4	-.06720	.84841	-.01678	-.079	.9381
PK5	-.25187	.42050	-.14658	-.599	.5595
PK3	1.87572	.64860	1.08587	2.892	.0126
(Constant)	-.78137	.81190		-.962	.3534

End Block Number 1 All requested variables entered.

MORE

NAME	EK	EK91	EK92	EK93	EK94	EK95
Australia	.33	.35	.36	.38	.39	.42
Belgium	.11	.12	.12	.13	.13	.14
BRD	.19	.20	.21	.22	.23	.24
Danmark	.13	.14	.14	.15	.15	.16
ENG	.20	.22	.22	.24	.24	.26
Espan	.25	.27	.27	.29	.30	.32
FRN	.24	.25	.26	.28	.28	.30
IRLAND	.43	.46	.47	.50	.51	.54
ITALY	.27	.29	.29	.31	.32	.34
JAPAN	.76	.82	.83	.88	.91	.97
KANADA	.17	.18	.19	.20	.21	.22
KOREA	.26	.28	.28	.30	.31	.33
NIDERL	.43	.46	.47	.50	.51	.54
NORWEG	.13	.13	.14	.15	.15	.16
OSTER	.19	.20	.21	.22	.23	.24
SCHWED	.14	.15	.16	.17	.17	.18
SCHWEIZ	.17	.18	.18	.20	.20	.21
SUDAFRIKA	.22	.23	.24	.25	.26	.27
TURKEI	.54	.58	.60	.63	.65	.69
USA	.58	.62	.64	.68	.70	.74

FIG. 5-4 (a)

FIG.5.4. (A) SHOWS A PART OF STATISTIC PROGRAM THAT HAS DOWN IN SPSS PACKAGE. THE TEXT IS AN OUTPUT OF REGRESSION ANALYSIS WITH THE HELP OF SPSS PACKAGE FOR MULTI POLITICAL PROCESSES / AND OUTPUT AS REGULATION VALUE FOR 1991 TO 1995 YEAR.

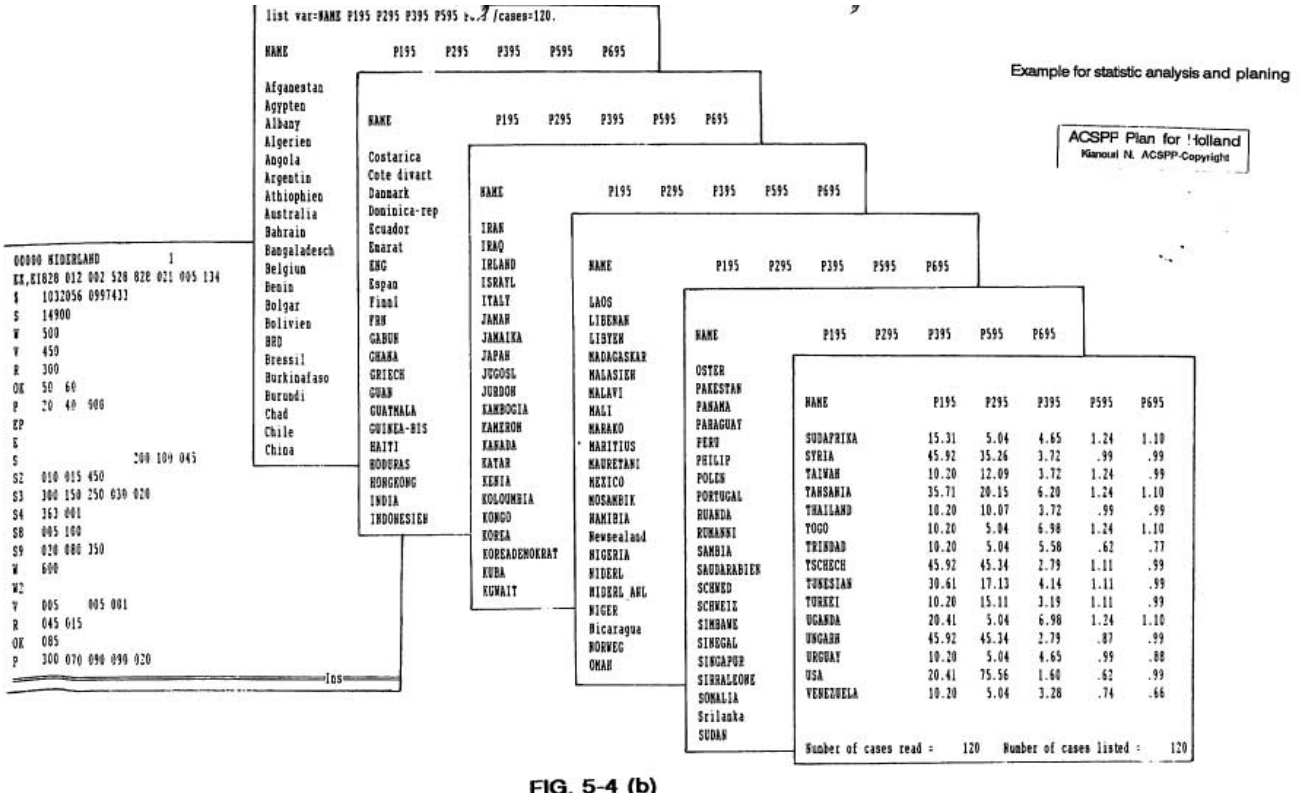

FIG. 5-4 (b)

FIG.5.4. (B) YOU CAN SEE ALSO POLITICAL STATISTICAL ANALYSIS AND PLANNING METHOD WITH THE HELP OF SCPP. THE FIGURE SHOWS THE STATISTICAL ANALYSIS OF ONE POLITICAL ELEMENT IN CURRENT OF FIVE YEAR AND IN WORD-WIDE GEOGRAPHIC LIMIT (FOR 120 COUNTRIES). IN THE LEFT SIDE OF THE FIGURE SHOWS THE PART OF POLITICAL DATABASE OF HOLLAND AS AN OBJECT.

5.6- SCPP Interfaces with Other CIPSE Stations:

5.6.1- SCPP / PISH (Managing Information System of important aspects of the management of quality organization. Quality is a multifaceted entity, eight dimensions:

- Performance
- Reliability
- Durability
- Serviceability 5- Aesthetics
- Features
- Perceived quality
- Conformance to standards.

A critical part of the strategic management of quality within and policy is the recognition of these dimensions by management and the selection of the dimension along which the policy will compete.

Some specific functional responsibilities for management SCPP are discussed below:

- **Political solution planning, operation, and research;** these functions have responsibility for providing the operation research activities that· lead to a political solution description that. Best fulfils the Political user's fitness-for-use objectives.
- **Development engineering;** This function responsible for the original product design, determining specifications, design for enterprising, selection of political facts and data, and performance characteristics of the Political solution.
- **Enterprising engineering;** This function is responsible for the selection of enterprising processes I the design of aspirate political solution equipment, the selection of work methods, the design of workplaces, the provision of satisfactory working conditions, and the analysis of enterprising-related problems that arise as a result of producing a Political solution of the desired quality.
- **Enterprising management;** these managers are responsible for operator education, proper, proper maintains of enterprising facilities, correct interpretation of drawings and specifications,

and control of the Political solution as it is enterprise.

5.6.2- SCPP / PISE The methods of Statistic process control can provide significant payback to those that can successfully implement them. While SPC seems to be a collection of Statistical based problem-solving tools, there is more to the successful use of SCPP than learning and using these tools. Management involvement and commitment to the quality-improvement process is the most vital component of SCPP's potential success.

Statistical process control methods and experimental design, two very powerful tools for the improvement and optimization of processes, are closely interrelated. Experimental design is a active Statistical method: we will actually perform a series of tests on the process making changes in the inputs and observing the corresponding changes in the outputs, and this will produce information that can lead to process improvement.
Experimental design methods can also be very useful in establishing Statistical control of a process. Experimental design is a critically important engineering tool for improving a enterprising process. It also has extensive application in the development new processes. Application of these techniques early in process development can result in:

- Improved yield.
- Reduced variability and closer conformance to nominal.
- Reduced development time.
- Reduced overall costs.

Experimental design methods can also play a major role in engineering design activities, where new political solution are developed and existing ones improved. some applications of Statistically experimental design in engineering design include:

- Evaluation and comparison of basic design configuration.
- Evaluation of material alternatives.
- Determination of key Political solution design parameters that impact performance.

Use of experimental design in these areas can result in improved enterprise ability of the Political solution, enhanced field performance and reliability, lower Political solution cost, and shorter Political solution development time.

Guidelines for Designing Experiments - Experimental design methods are a powerful approach to improving a process. In order to use this approach, it is necessary that everyone involved in the experiment have a clear idea in advance of the objective of the experiment, exactly what factors are to be studied, how the experiment is to conducted, and at least a qualitative understanding of how the data will be analyzed.

- Recognition of and statement of the problem
- Choice of factors and levels
- Selection of the response variable
- Choice of experimental design
- Performing the experiment
- Data analysis
- Conclusions and recommendations.

Quality improvement tools for SCPP can list as:

Process Flow Diagram:

- Expresses detailed knowledge of the process
- Identifies process flow and interaction among the process steps
- Identifies potential control points.

Cause and Effect (Fishbone) Diagram:

- All contributing factors and their relationship are displayed
- Identifies problem areas where data can be controlled and analyzed.

Control Chart:

- Helps reduce variability

Check sheet:
- Simplifies data collection and analysis
- Spots problem areas by frequency of location, type, or cause.

Pareto Diagram:
- Identifies most significant problems to be worked first
- Historically 80% of the problems are due to 20% of the factors Shows the vital few.

Scatter Plot:
- Identifies the relationship between two variables
- A positive, negative, or no relationship can be easily detected.

Design of Experiment (DOE):
- Useful in process development and troubleshooting
- Identifies magnitude and direction of important process
- variable effects
- Greatly reduces the number of runs required to perform an experiment
- Identifier interaction among process variables
- Useful in engineering design and development
- Focuses on optimizing process performance.

Histogram:
- The shape shows the nature of the distribution of the data
- The central tendency (average) and variability are easily seen
- Specification limits can be used to display the capability of the process.

5.6.3- SCPP / PDBMS (Managing Database System of SCPP) - In certain environments, such as Governmental or administrative authorities, much of the source material for the analysis comes from Statistical databases. In such cases the quantities of databank of Statistical time can be very large. The Political-Statistical database applications are complex because they involve data and procedures of complex disciplines (policy, Political economic, defence, Political social, etc.). They have requirements that far exceed the capabilities provided by current commercial data management systems.
There is increasing tendency to build Political-information systems to monitor quality, for which large databases are then made. Statisticians are often asked to do data analysis, such as regression, with these data. We always emphasise that it is important to build a database in such a way that it can answer relevant questions and be used as input for standard Statistical computer packages.
A data structure which can easily be used for statistically calculations is a matrix where rows are identified with units of Political-solution and columns with variables.

5.6.4- SCPP / PPHS (Project Managing of SCPP) - Statistical Process Control involves using Statistical data to improve processes and prevent deficiencies. It consists of performing capability studies to
- Monitors performance over time
- Allows process corrections to prevent rejections
- Trends and out-of-control conditions are immediately detected.

Determine variability in a process or equipment, identifying the causes of variability, changing the process to reduce the variability, and monitoring the results of the process change. Statistical Process Control is based upon mathematical theories of probability and uses tools such as frequency distributions, histograms, control charts, and problem solving techniques and charts and problem solving techniques. Numerous computer programs exist for the analysis of Statistical Process Control data, and the principles of Statistical Process Control can be applied to problem solving in many areas of project activities.

2.6.5- SCPP / PCHS (Communication Managing of SCPP) - For example SCPP Micro-to-Host Link can be used to connect your personal computer SCPP environment with SCPP installed on a "host" computer. The host is typically a mainframe computer running TSO, CMS, or VMS.

The link is started from within a SCPP session on the PC. It starts a SCPP session on the host, and establishes a connection between the tow SCPP sessions. For the duration of the link, you can work in either environment or, or transfer data from one to other. You terminate the link from the PC session.
The Micro-to-Host link provides many new possibilities for SCPP users. We will cover two key features: moving SCPP files between PC and host SCPP Systems, and running SCPP programs on the host from your PC.

5.6.6- SCPP / POHS - In implementation a Political centre-wide SCPP program, we have found that the following elements are usually present in all efforts:

- Management leadership.
- Team approach.
- Education of employees at all levels.
- Emphasis on continuous improvement.
- A mechanism of recognizing success.

The SCPP team can:

- Identify the project.
- Determine the parameters.
- Determine the Political users and the interactions.
- Work initially in the department but later for large projects. They should be multifunctional.
- Train in the new Tools as well as the traditional tools of problem solving.
- Co-op people with special skills and knowledge.

We cannot overemphasize the importance of management leadership and the team approach. Successful quality improvement is a "top down" management-driven activity. It is also important to measure progress and success, and to spread knowledge of this success throughout the Political organization. When successful improvements are communicated throughout the political centre, this can provide motivation and incentive to improve other processes and to make continues improvement a normal part of the way of doing policy.

Management is a role model, and others in the Political organization will look to management for guidance and for example. A team approach is also important, as it is usually difficult for one person alone to introduce process improvements. Many of the "magnificent seven" are helpful in building an improvement team, Including cause and effect diagrams, Pareto charts, and defect concentration diagrams. The basis SCPP problem-solving tools must become widely known and widely used throughout the organization. Continuous training in SCPP and quality improvement is necessary to achieve this widespread knowledge of the tools.

5.6.7- SCPP / PES (Expert SCPP) a Statistical expert system is a computer which can act in the role of an expert Statistical consultant. That is, it can give expert advice on how to design a study, what data should be collected to answer the research question, and how to analyse the data. Moreover, since the fundamental tool of Statistical analysis is the computer, on which the expert system will be run, it is normally envisaged that the expert system and the data analysis routines will be an integrated whole. Thus, not only does the system advice on the analysis, but it also actually carries it out, discussing the results and the direction of further analyses with the user.
Research on Statistical expert systems is having a general impact on Statistical. One example is the growth of interest in notions of Statistic strategy. A Statistic strategy is a formal description of the choices, actions, and decisions to be made while using Statistic methods in the course of a study. Obviously such a description is vital before an expert system can be built - it will comprise the core expertise that the system uses.
The main components of the Statistic expert system are:

- Database, or DB, system,
- Knowledge base, or KB, system,
- Expert system, or ES,
- Knowledge acquisition and verification tools.

5.6.9- SCPP / PESK (Managing Software of PSCP) - Standard Statistical Integrated Software for Political use - Statistic packages such as SPSS (Statistical Package for the Social Science), and SAS

(Statistical Analysis System) can perform virtually any Statistical operation such as determining standard deviations, variances, and so forth. Versions of Statistical packages are available for micros, minis, and mainframes.
Enterprise Statistical makes very much use of standard Statistical computer packages to carry out routine calculations, such as the analysis of variance and regression. The latter would be impossible without the computer.

SPSS/PC+ Version 4.0; SPSS/PC+ Version 4.0 is both a new software product and a continuation of the SPSS line of powerful Statistic and information analysis systems running on a wide selection of mainframe and personal computer. As a new product, it increased power and flexibility to the field of Statistic and reporting software for the IBM PC family of computers. As a major enhancement of SPSS/PC+, it supplies most requested by users of the popular package.

The SPSS/PC+ product contain many facilities for analyzing and reporting data. For most problems, you will probably want to may be temping to run a lot of different procedures with which you are not very familiar in hope of making sense of the data, this is not a very good tactic. You should instead think about the problem you want to solve, spend some time considering the Statistical techniques that may be helpful in arriving at a solution, and only then proceed with analysis. You should also keep in mind that the most complicated procedure is not necessarily the best. A little common sense and though will not only save time but give better results as well.

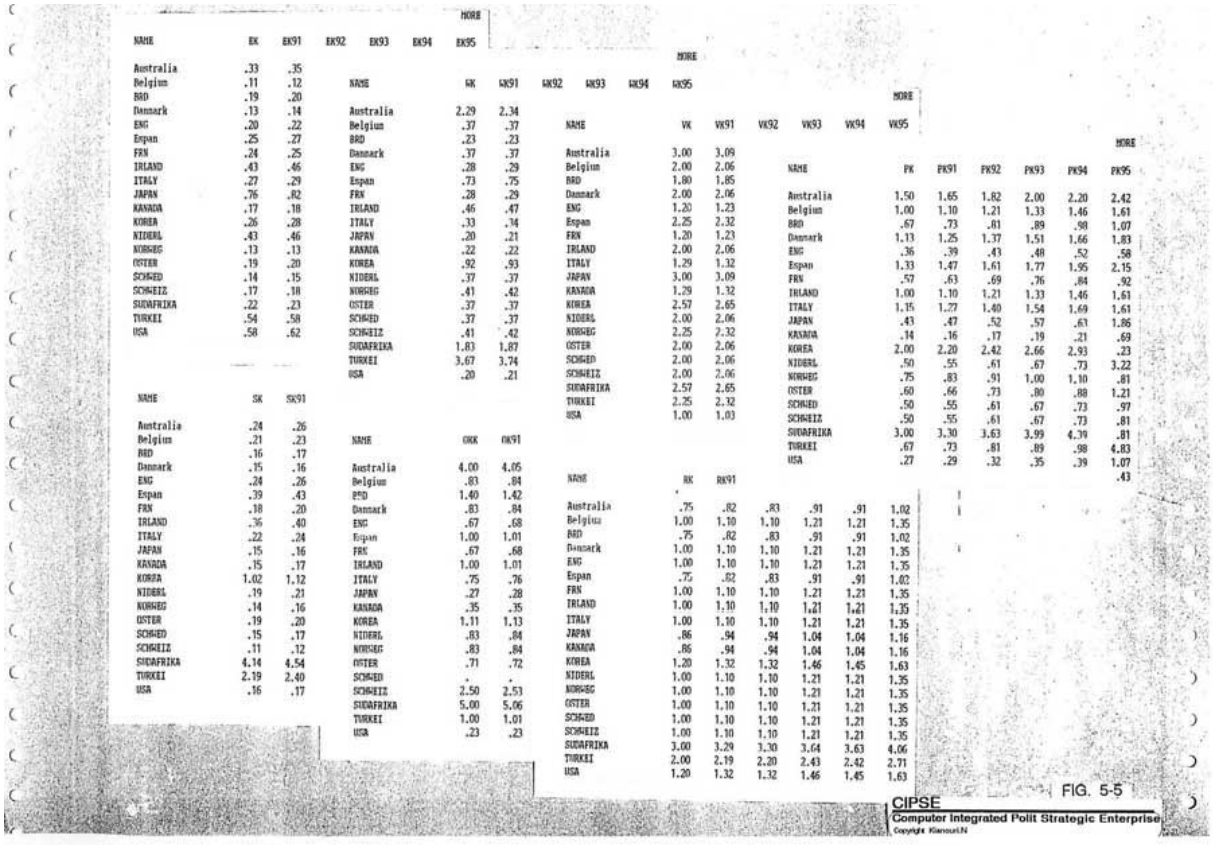

FIG.5.5. IS A STATISTICAL OUTPUT OF POLITICAL MODELS OVER 21 COUNTRIES. THE MODEL HAS IN SPSS PACKAGE PROGRAMMED.

SAS Version; The SAS system is a software system for data analysis. The goal of SAS Institute is to provide data analysis one system to meet all their computing needs. To the all-purpose base SAS software, you can add tools for graphics, forecasting, data entry, and interfaces to other data bases to provide one total system. SAS software runs on IBM370 and compatible machines. Version 6.0 and high levels of SAS package runs on:
Microcomputers: IBM AT, and PS/2 under MS/DOS and PC DOS. Minicomputers: Digital equipment Corp. 's VAX under VMS, Prime Computer, Inc.'s Prime 50 under PRIMOS, and Data General Corp's ECLIPSE under AOS/VS.

Mainframe computers: IBM Corp's 370/30xx and compatible machines under as, CMS, and DOS/VSE. Base SAS software provides tools for:

- Information storage and retrieval
- Data modification and programming
- Report writing
- Statistic analysis
- File handling

With base SAS software, you can integrate SAS software products for graphics, data entry, operations research, and interfaces to other data bases to provide one total system.
The SAS system was created to provide an integrated system for Statistic analysis. A comprehensive system for data and Statistic analysis must include comprehensive tools for data management. The designers of the SAS system realized this. The result is that the SAS system is not only the leading system for Statistic analysis but it is also an excellent system for more data-oriented applications such as often carried out in database system. For this purpose, the SAS language includes statements for editing, sub setting, concatenating, merging, and updating data files.

5.6.10- SCPP / PEHH (Managing Enterprise Hardware of SCPP) Computers, or any other technology, have never solved any problems, they have helped people to solve them, often in ways which would otherwise have been impossible. At the end of the day it is always the people who solve the problem, and when discussing the use of computers in Political-SPC (Statistical process control) is important first of all to understand the problems themselves.
Any discussion of the use of computers in SPSC must start from the knowledge that use of these techniques predates the availability of low cost computers by half a century. The computer therefore is not essential to the use of SPC, but it can be a big help. The major advantages of using computers in Political-SPC are that:

- They can process large quantities of data economically.
- With proven software complex calculations and procedures can be carried out with consistent accuracy.
- Political-information is available throughout the policy.
- Political information can be manipulated in different ways to support the decision-making process.

5.6.11- CIPSE-SCPP Project - The SCPP programming is Statistic module between CIPSE modules. SCPP is a Statistic analysis system, and many of the characteristics of the SCPP can be track back to its Statistic background.
Scientists observe nature and attempt to draw conclusions. One way they do that is by making numerical measurements and looking for patterns in the numbers. The latter part of that process is what we call Statistical.
In one kind of experiment, the same measuring process is done many different times. Each instance of measuring is called an observation, and each different quality that is measured is called a variable. That's the source of those two SCPP terms and of the form of a SCPP dataset.

Ideally, Statistic observations are independent - that is, the different observations do not affect or depend each other. This simplifies Statistic analysis: the data from each observation can be processed separately, without reference to data from the other observations, and the order in which the observations are processed does not affect the conclusions. When the processing is done in a computer program, it makes possible the observation loop, a repeated process of reading one observation at a time into memory and extracting the information needed from it. The observation loop became a central part of the design of the SCPP System, and it was subsequently found to be useful in all kinds of application.

Modularity - From the start, the SCPP system had a modular design. Instead of being one monolithic program, or a small group of related programs that run at different times, it was a large collection of several types of .programs that are coordinated by a central program called the supervisor. The specifications for each type of program were published, so that it was possible for anyone with the requisite programming skill to expand the system.

Even the SCPP system's reading and writing routines were modular, and that made it easy for the system to read data in almost any format in use. The SCPP language's input and output capabilities are still among the most powerful and flexible of any programming language.

Simplicity The original SCPP System did not have most of the features of the SCPP System of today. Features like screen support and macro language were added gradually, in patchwork fashion, and the language syntax itself was expanded. Each new addition has gone off in its own direction, but the core of the system still embodies much of the elegance of the original SCPP System.

What Kind of Language is SCPP - Although SCPP programs look much like programs written in other programming languages, there are several things that distinguish SCPP.

1- Interpreter A programming language is usually implemented either as an interpreter or as a compiler. An interpreter runs a program by determining the meaning of each program statement, then earring it out. A compiler translates an entire program into machine language in a separate file, which can then be executed. Compiled programs run faster, but you have to take the time to compile them. Interpreted programs provide more immediate feedback when an error occurs, but they run more slowly and can only be run when the interpreter is present.
SCPP is an interpreted language, but it also has some of the characteristics of a compiler. Some parts of SCPP programs are compiled. And most SAS statements, rather than being interpreted and executed one at a time, are grouped into segments called steps before being executed.

2- Step-structured - In a sense, the SCPP language is structured each, step is isolated from every other step in the program - but in another sense, it isn't, because it does not allow traditional techniques of structured programming. Structured programming involves a top-down design in which program units nest inside other program units, but the SCPP language only allows steps to run one a time, one after another. It seems fair to call SCPP a step structured language.

3- Library You expect a programming language to come with a library of functions. In a addition to a few hundred functions, the SCPP System contains information and formats, specialized routines that are mainly used for input and output; Call routines, which do some small useful things; and, of course, Procs, known formally as procedures, are the specialized application programs that to most SAS users are the main attraction of the SAS System process do everything from sorting to bar charts.

4- Shell - Older programming languages were designed with teletype style terminals in mind. In the highest form of interaction possible with those terminals, the user would type something, and then the computer would type something. Although the SCPP System still supports that kind of user interface, it has several special features for more advanced forms of input and output.
It automatically creates two special output files. The log file contains the SCPP supervisor's step-by-step account of the execution of the program, including the program statements, notes, warnings, and error messages. The standard print file, sometimes called the output file or the print file, contains page of results from programs. Both files are suitable for viewing on screen, printing, or storing.
The SCPP System also provides you with temporary storage space for data, primarily in the WORK library, that you can use freely without having to plan it in advance or arise anything afterward.
The SCPP System includes a full-screen user interface, the SCPP Display Manager System, which includes a command line, a text editor, and separate windows for the log, the standard print file, and other information related to the SCPP System. The display manager interface is designed primarily for an interactive programming approach, but it can use in other ways too, for program development, or as an operations centre.