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1.0 Introduction

Fundamental changes are taking place in the outlook of libraries in the way the users are facing the emerging "Information Age". The old traditions, concepts and conventions are undergoing a sea of changes owing to the electronic industrial revolution. The past glories of the libraries will give an insight gleaning towards the virtues of unique characteristics of knowledge - preserved, processed and served, exploring the important aspects of complex phenomenon of library materials conventionally and non-conventionally to the users. The catalyst of change is intangible and all pervasive knowledge - diffused around the globe seems to move faster than the speed of light. The two technologies predominantly the satellite and the semiconductor "chip" have become the driving forces for the "Information Revolution".

Dawn of Technology: Optimistic View

The printed books enforced an intellectual habit of linearity, logic and sequential thinking that resulted in modern science and bureaucracy. For the last 150 years the technology has promised us utopia. The steam-engine, the automobile, the aeroplane, electricity, nuclear energy, the computer and chip technology have promised us a collective salvation in personnel life. The political economy is now of major concern of all advanced nations and of increasing impact to the developing ones. More and more, all nations have begun to see "information" as a new source and treat it as "Capital resource" to apply information to political, economical and social status and problems. Thus "Information" is required for efficient management of enterprises and personal affairs. It
The first half of the electronic revolution has made a tremendous impact on the work of the people, play and learn with the introduction of computers, word processors, micro processors etc, benefitting a wide spectrum of humanity. The second half of the micro electrical revolution is heading to change dramatically the outlook of the people with memory revolution even at a faster rate than what it was seen in the first half. The library of several thousand books can be accommodated in a device no bigger than a photocopier. With a few keywords and commands types on a key-board, the machine will find the pages you wanted and display them on a screen or crank out photocopier on paper. Surprisingly the entire Encyclopaedia of Britannica can be had on a single disc. (CDROM: It is an optical disc of 12 cm in diameter and a hole of 1.5 cm at the centre and it has 0.12 cm thickness) You can put it into a special disc player, name the subject you want to study and the text appears on screen. The most impressive is a laser-encoded disc, shaped much like a photograph record which can store on one side all the words contained in lakhs of books - equivalent of a small college library.

Efficacy

It is assumed from the background of "Information Explosion" that information environment is already part of the conventional and non-conventional wisdom. Scientists administrators, policy makers and executives are very well aware of the value of information and its potentiality in any field of science and technology. Research and development activities are assuming special significance in the diffusion
and utilization of knowledge generated. The field of science and technology is the major source of activities where the knowledge developed has to be presented in a standardised form and in a specific, simple and understandable form for implementation by the end user on a large scale. It should be uniform and could be used commonly. Thus standards and specifications serve as the clearest and most significant source materials for policy makers in the government, universities, industries, national institutes and foundations, who can take concrete and immediate action to change diffusion and utilization system that exists in research and education and also in other areas that effect our national growth and welfare.

Genesis of Standards and Specifications

These tiny documents are normally called as "Non book materials" or scientific enduring literature. The flow of these materials is quite common in the library and the preservation and use of these documents are equally important in research pursuits. The diffusion and utilisation of these materials in the field of industries, educational area and particularly in defence production is highly felt but the process of communication and utilisation is felt far from satisfaction. The present study intends to highlight the importance of these materials and its tremendous impact on the development and the growth of scientific endeavour.

Perhaps the most striking example of standardisation is found in early pre history' the form and shape of stone implements which exhibit an extraordinary degree of similarity whether they have been found in
The most fundamental standards conscientiously and deliberately evolved by the ancient were those of weights and measures which formed the basis of all measurements as an essential pre-requisite for any standardisation. During the period of middle ages, gradually as complexities of life increased and clever operators began to learn how to falsify standards, particularly measurement standards, to their own advantages, more extensive legislative measures began to be taken. Laws were promulgated in many lands, basing the standards of length mostly on human body dimensions. By the time the first world war broke out standardisation had been well recognised as an industrial process capable of ensuring productivity through interchangability, not only within a given factory but also from one factory to another and the importance of creating industry-wide standards and national standards slowly began to be realised. International standardisation movement began to develop early in the twentieth century, when the electrical engineers and physicists concerned with the development of electricity and its uses established the first ever organisation for standardisation on a world-wide basis. The experience of first world war revealed further potentialities of standardisation.

The second world war brought the urgency of national and international standardisation even more pointedly to the forefront. The supply and maintenance facilities of the allied were severely strained because of differences in standards which prevented interchangable use of tools and even of common engineering stores like bolts, nuts and screws. Supply management during the war also re-emphasised the
importance of standardisation and variety reduction in materials and products and brought about the evolution of many new techniques including operational research, value analysis, linear programming, statistical quality control and so on. Another factor which gave a spurt to the standardisation movement during the post war stage was the creation of the "United Nations Standards Co-ordinating Committee" for bringing together the existing national standards bodies into an International forum. The co-ordinating committee of the united nations met in 1946 and brought into being what is today known as the "International Organisation for Standards (ISO). ISO since then, made valuable contributions to the growth of world standards and the development of the standardisation movement as a discipline. The idea of standardisation being a vital part of national planning is of relatively recent origin as far as most of the developing countries are concerned.

The most consensus principle in the remarkable historical development in the realm of standardisation has been the evolution of the authority which makes voluntary standards effective instruments for guiding commerce and industry and constituting an economic force in national life and also in international trade. An attempt has been made to the study the problems of "diffusion and utilisation of standards and specifications in defence research and development organisations in Bangalore ".

1.1 Statement of the Problem

Diffusion and utilisation of standards and specification in Defence Research & Development organisations in Bangalore.
"A Specification is a detailed set of requirements to be satisfied by a product, material process or system, indicating the procedures for checking conformity to these requirements. For information or guidance a check list may be provided of matters related to but outside the scope of the specifications requirements, on which contractual agreement appropriate. Alternatively, such information may be published separately in the form of a British Standards method of specifying. In such cases all that is standardized in a particular way of setting down requirements for contractual purposes".

"A standard is a written formation, or a physical representation in the form of a graph or sample or model, which serves to define, designate or specify certain features of a unit or basis of measurement of an object, an action, a process, a method, a practice, a capacity, a function, performance, a measure, an arrangement, a condition, a concept or a conception".

1.2 Terminology

a) **Diffusion** - The transmission of elements or features of information from Macro to Micro level.

b) **Utilisation** - Use, utilise means to make something serve one's purpose. Use is the general word: to use a telephone. Utilise implies practical or profitable use, to utilise exhausts, waste etc. The terminology of both diffusion and utilisation can be further expanded for all practical approaches as follows:

It is to undertake the integration of existing knowledge in the defence area and to develop a set of operating principles, derived from
the compiled findings, for the guidance of research, practice and public policy with a special reference to the field of defence.

c) **Standards** - The authorised example of units of weight and measure, fulfilling specific requirements as established by an authority, law rule, custodian, etc.

d) **Specification** - The act of specifying a detailed description of requirements, dimensions, materials etc.

1.3 Need for the Study

Man is a social being endowed with the power of thinking and learning capacity. His needs and requirements for comfortable life are always increasing. It is now self-evident that there is a quick need for communication of information. To sustain a technological development of the country, the latest information is needed for research activities, which are going on at global level. As a result of stiff competition, cooperation and team research work there is a tremendous increase in research and development activities, which in turn results in "information explosion". Research pursuits increased manifold. Printed materials in the form of macro and micro documents came into being soon after the second world war. The proliferation of "Non-book materials". Now called "Scientific Enduring Literature" in the form of micro documents established their importance for quick communication of information for enhancing and for exchange of research activities particularly in the field of defence applications. The Defence Research and Development Organisation now shortly called DRDO became the resource centre for the diffusion, development and utilisation of technical information. It
became mandatory for DRDO Libraries to supply information required without any loss of time to various policy makers, scientists, managers, designers and evaluators of technological progress. The DRDO Libraries developed their collection of literature, processed them, stored and retrieved them as and when required. In support of this, mission-oriented, doer-oriented and project-oriented services were initiated to help the scientific community at large by all DRDO Libraries in general. For the effective, pinpointed and exhaustive information services, the extensive survey and assessment were felt essential to know what kind of documents the DRDO library started possessing, the kind of organisation it needs and type of services it should render. User-study played an important role and these libraries have been developed as "Information Centres" catering to the needs of several hundreds of Scientists in DRDO libraries. Principles of "Know-How", "Show-How" and "Do-How" became the order of the day. Mass Message, Media and Culture were felt essential.

1.4 Objectives

The objectives of the present study are:-

1. To know the availability of standards and specifications;
2. To assess the collection of standards and specifications;
3. To organise and maintain the different types of standards;
4. To identify the hindrance to the development of collection of standards and specifications.
5. To observe the co-operative efforts followed in collection of standards and specifications;
6. To educate the use of standards and specifications.
7. To examine the different approaches of standards by DRDO scientists;
8. To evaluate the standard's requirements of the DRDO scientists;
9. To understand the use of National and International standards;
10. To recognise the different access to standards by DRDO scientists;
11. To get users opinion regarding the availability and use of standards;
12. To collect the user's opinion on the organisation, maintenance of infrastructural facilities available and helpfulness of library staff in making use of standards;
13. To find user's attitude towards collection of standards; and

1.5 Formation of Hypothesis

On the basis of the above objectives, the following hypothesis have been formulated:
1. The collection of standards and specifications in DRDO libraries is inadequate;
2. Organisation and maintenance of standards in DRDO libraries is very poor;
3. The use of standards and specifications by the user in DRDO libraries is moderate;
4. Approach to the mandatory standards is high;
5. Utilisation of the International Standards is very high;

6. Efficiency of International Standards at Global level is high;

7. Usage of standards is more by scientists than other categories of research workers;

8. Approach to active standards is high;

9. Helpfulness of standards is more in DRDO libraries in research work to access technological development; and

10. Services offered by DRDO libraries in providing information on standards is inadequate.

1.6 Methodology and Study Population

1.6.1 Methodology:

There are many techniques used to collect the data required for study. Generally questionnaire method, interview method, observation method, case study method, etc, are used in one or other context. Any of these methods or combination of two or more methods are being used in studying the users of information. Keeping in view the present study, the questionnaire method, interview method and observation methods are used for the collection of data.

1.6.2 Study population:

The study population has been categorised in the following groups:

(a) Policy makers (b) Scientists (c) Engineers (d) Scientific assistants
(e) Designers (f) Technological gate keepers (g) Adopters
In all 150 questionnaire were distributed to scientists in DRDO who are actively making use of standards. Out of 150 quires 122 (81.3%) responded.

1.6.3 Interview and discussion method:

Visited all the DRDO libraries in Bangalore and interviewed the users of standards of different organisations like Policy makers, Scientists, Engineers, Scientific Assistants, Designers, Technological gate keepers, and Adoptors. Discussed with different DRDO librarians to collect information about the factual status of standards usage.

1.6.4 Observation method:

Personally visited different DRDO libraries to get to know the various organisation structure for the study. The observation has been depicted the various functions of DRDO libraries in the term of charts, tables and graphs.

1.7 Chapterisation

Chapter - I

Gives the introduction, statement of the problems, need for the study, the objectives, hypotheses and the methodology.

Chapter - II
Diffusion and utilization of standards covering systems approach and problems and indigenous of requirements, and utilization problems with model representation.

Chapter - III
Review of Related Literature

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Chapter - IV
Discusses the concept of standards and specifications. It includes the meaning of the terminology, definitions, objectives, need for standardisation, various aims of standardisation, different principles of standards, types of standards and advantages of standards.

Chapter - V
Studies the growth of standards and specifications. It covers history and growth of standards, religious edicts. It also discusses the existence of standard in the middle ages and how the standards came into existence. It further discusses world International standard organisations, evolution of International standards, and Bureau of Indian standards and history and developments of Indian Defence Standards.

Chapter VI
Gives brief account of DRDO libraries in Bangalore.

Chapter VII
It covers analysis of the data in two parts.
Part I : Deals with adequacy and availability of standards and specifications and usage of infrastructure facilities.
Part II : Deals with the users of DRDO libraries and their opinion.

Chapter - VIII
Enumerated the model network for DRDO libraries.

Chapter - IX
Highlights the findings, suggestions and recommendations for the further studies.
At the end appendices containing the questionnaire used for collecting the data, the list of US standards organisation, number of international bodies, group of institutions of International and non-US national standards and in addition, a select list of bibliography is given.

The next chapter - II, is exclusively dealing with the problems of Diffusion and Utilisation of standards and specifications in the defence area.
References


