

Are Demand Forecasting Techniques Applicable to Libraries ?

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Examines the nature and limitations of demand forecasting. Discusses plausible methods of forecasting demand for information. Suggests some useful hints for demand forecasting. Concludes by emphasising unified approach to demand forecasting.

0 INTRODUCTION

It is very common in industry to forecast the demand for its products. The natural question that follows is, does information industry including libraries practice demand forecasting techniques? If we narrow down the scope to documentary information, the intermediaries such as publishers, vendors and libraries have to have some methods of projecting and predicting the demand. Demand forecasting does exist to some extent with publishers and vendors. But in case of demand for information by ultimate users, who normally do not always bear the cost, it is found highly elastic and less reliable. Neither users can exclusively possess information nor the marginal cost concept is well applicable to information industry. Interestingly, the value of information does not decrease in proportion to number of people who possess it but certainly the strategic value goes down if too many possess it. It is not unusual to conceive information as a commodity or public good. Considering the whole information system, 'information' is both product as well as raw material. Libraries are built largely based on anticipated demand. As such forecasting of demand for documentary information becomes inevitable in developing a library.

1 NATURE AND LIMITATIONS OF DEMAND FORECASTING

Demand forecasting is predicting the probable demand for a commodity or product or service among actual as well as potential customers. It can

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be confined to users belonging to an organisation or a society or a geographical area or any segment of the population. The forecast of demand for information is only one of the inputs to total information needs of users.

The most difficult task in demand forecasting is to utilize and quantify 'information' as a product and distinguish and equate traditional services with unusual information services. The terms 'use', 'utility', 'demand' become highly ambiguous and context dependent as far as information is concerned. The concept 'information' itself is amorphous, inexact and intangible when we attempt to quantify its value. On the other hand merely following quantitative figures lead to disastrous results in demand forecasting. At the same time, heavy reliance on value judgement may make the forecasting lopsided. A cautious blending of both experience and commonsense is needed. Ideally, forecasting of demand for information should be as accurate as possible and is essential for a library in order to build up its information resources in anticipation in such quantities and such forms as to optimise cost, time and effectiveness.

There is no easy or simple formula to accurately and completely forecast demand for information. Nor information demand is always recurring and repetitive in nature. Even two similar situations may result in demand for different type and amount of information. Since most of the methods of demand forecasting are largely based on quantifiable demand determinants a qualitative touch is much desired. However, no method will be complete and self contained. It is not only desirable to adopt more than one method but also necessary to blend them with commonsense, thinking and judgement.

Demand forecast can be for short-run projections such as demand for information in a decision making process, during execution of a project or a particular season, or for long-run projections such as demand for information over a decade on the library of a mission or discipline oriented organisation. Similarly, demand may be for repetitive information service or for new information service. In case of repetitive demands, forecasting becomes fairly easy. The past information seeking behaviour of users in relation to existing information sources and centres gives a clue for repetitive demands. On the other hand, demand for new type of information and information services appears to be unique and spontaneous leaving very little empirical evidence for reliable demand projection. In fact, demand forecasting is a continuous process and projections need to be updated quite frequently.

2 METHODS OF FORECASTING

21 USER OPINION SURVEY

The most direct method of forecasting demand for information in the near future is to ask users, probably a selected representative sample popu-

lation about their information requirement and needs. Such surveys are quite common in libraries. Opinion survey method basically puts the forecasting burden on users and the librarian merely persuades users to tell him what they feel as their requirement. It is not only necessary to discount unrealistic and exaggerated needs but also to identify unexpressed needs. This is more so in case of information needs of general public as library services are of paternalistic nature.

This method has several drawbacks. Firstly users may not be able to foresee, identify and express their needs in reasonably accurate terms. Secondly, they are likely to have strong likes, dislikes, fancies and biases about what their library should possess. Thirdly, as this method heavily depends on sampling, questionnaire and/or interviewing techniques, it has all limitations of methodology. Fourthly, it is fairly expensive and time consuming. Lastly, this is a passive method in the sense that it lacks the vigour of marketing and fails to induce a desirable need in users and users often confine themselves to existing services.

22 SURVEY OF COLLECTIVE OPINION OF PEOPLE WHO KNOW USERS

This paternalistic approach presumes that librarians, information scientists, leaders, managers, planners, etc. know fairly accurately the needs of users. Since these are the people who set, identify and promote the objectives of the user community they could be better predictors than actual users. A good example is information needs of R&D organisations. Unlike traditional industries, libraries do not normally overtly use this method.

Like user surveys, this method of collective opinion of people may also carry strong biases. Hence forecasted demands have to be further examined in the light of laid down objectives of the user groups, proposed changes, anticipated deviations and other factors of the environment.

This method is simple. The forecasts are based on first hand knowledge of people directly connected with the objectives of user group. It may prove quite useful or it may be the only method in case of new organisations. On the other hand it is fairly subjective as personal whims and fancies of a handful of people may be projected. Its utility is restricted to short term forecasting as people at this level may not remain for long time. Above all information needs cannot be thrust upon actual users by any manager or leader.

23 STUDY OF PAST BEHAVIOUR OF USERS

It could be a study of actual users or users in the similar environment elsewhere. In either case, case studies of user needs emphasising need for

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information in various stages of work or project would be highly pertinent. This method heavily depends on data from indirect methods. Such studies help projecting trends in terms of both qualitative and quantitative demands. But they are often questioned about their capability to predict future behaviour and needs of users.

24 APPLICATION OF STATISTICAL TECHNIQUE

A wide spectrum of statistical techniques can be applied somewhat mechanically for forecasting demand for information in quantitative terms. A selected few are mentioned below. These techniques though applicable extensively to data from indirect methods, there is no bar in adopting them for data from direct methods such as questionnaire method.

The cheapest and easiest being 'Assume Constancy' which suffers from the drawbacks of rigid assumption of direct relation of the variables and ignoring the turning points. Another technique is 'Exponential Smoothing' which requires past quantitative data. This could form part of 'Time Series Analysis and Trend Projections'. Past data collected from a set of users who are actually seeking information arranged chronologically gives 'time series'. It is simple and inexpensive method based on the assumption that past rate of change of the variable under study will continue in the future. The assumption is alright till a turning point occurs. In case fluctuations and turning points are faced the factors responsible for characterising time series, *i.e.* trend, seasonal variations, cyclical fluctuation and irregular or random forces are to be analysed. The problem in forecasting is to separate and measure each of these four factors though such a decomposition of time series data is useful in understanding fluctuations.

Correlation and Regression Analysis is the other statistical technique for forecasting. Correlation Analysis aims to isolate and measure the relation between fluctuations in actual demand and the corresponding changes in the principal demand determinants. In Regression Analysis, an explicit functional relationship between one or more independent variables and the dependent variable is hypothesized and estimated. Given this estimated relationship and forecasts of values for independent variables, values of the dependent variable can be projected. Although the method is very expensive and elaborate, it can be made simple by adopting graphic correlation. The limitations of the method is that past relationship may not recur and value judgement becomes essential.

In addition, certain 'information indicators' such as educational/ intellectual level may help to establish regression equation.

25 INPUT-OUTPUT ANALYSIS

The concept behind this method is to recognise and correlate interrelated activities of users. That is treating information as an input and recognising some quantifiable output such as number of technical papers written or number of products to be designed, etc, an analysis will be made to arrive at demand for information.

26 CONTROLLED EXPERIMENTS

This method is nothing but standard research method of social sciences where certain determinants of demand for information are varied separately to conduct the experiment with the assumption that other factors remain constant. This is an expensive, time consuming, risky, and difficult to plan method based on certain unnatural assumptions.

27 EVOLUTIONARY METHOD

This method envisages projecting the demand as an outgrowth and evolution of an existing demand. This is more or less an intuitive method. This is useful only when the existing and projected demands are on the same line and are closely related.

28 SUBSTITUTION METHOD

Analyse the new service as a substitute for an existing service and estimate the demand is the approach of this method. Formalising an informal source of information can be an example to this method. Further one can notice the fact that documentary information can compete with information in other media.

29 GROWTH-CURVE METHOD

This method tries to estimate the rate of growth of demand for information based on earlier pattern of growth of demand. This is useful primarily at the later stages of demand projection.

3 SOME USEFUL HINTS FOR DEMAND FORECASTING

There are a number of interesting ideas and hints applicable in actual demand forecasting in one or the other method. A selected few are listed below:

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Population Changes: Some demands are closely related to population growth and demographic changes. Taking note of it is very essential.

Availability of Time: How much of spare time is available to users and of which how much is allocated for literature/information searching is equally important.

Need Level: General and predominant need level of users (e.g. Maslow's hierarchy of needs) will give an indication to information demand.

Educational/Intellectual Level: The nature and intensity of demand for information services depends on educational level of user community.

Opportunity for Decision Making: How often and how much varied important decisions the users have to make decides the risk involved in depending on information and hence emphasises the dependability, authenticity and hence quality of information.

Present Status of Information Services Available: The type of information services or facility to which user is already exposed determines the depth and breadth of his aspirations and hence helps in predicting nature of his future information needs.

4 CONCLUSION

It is possible to develop demand forecasting techniques to library on par with those in industry as demonstrated above. Many of these techniques are not new to librarianship, but differ only in nomenclature.

As discussed in the beginning, there is no single ideal method of demand forecasting suitable for all situations. It obviously depends on types and levels of users and information, availability of data, time and funds. The above mentioned methods are neither exhaustive nor mutually exclusive. In practice, one has to make wise decision in choosing a suitable method. A combination of two or more methods is often desirable when they can supplement and check each other. Whatever the technique, in all cases, one should bear in mind that the approach should be a unified approach of expertise and technique.

About the Author

Dr. M. S. Sridhar is a post graduate in mathematics and business management and a doctorate in library and information science. He is in the profession for last 35 years. Since 1978 he is heading the Library and Documentation Division of ISRO Satellite Centre, Bangalore. Earlier he has worked in the libraries of National Aeronautical Laboratory (Bangalore), Indian Institute of Management (Bangalore) and University of Mysore. Dr. Sridhar has published four books ('User research: a review of information-behaviour studies in science and technology', 'Problems of collection development in special libraries', 'Information behaviour of scientists and engineers' and 'Use and user research with twenty case studies') and 74 research papers, written 19 course material for BLIS and MLIS, presented over 22 papers in conferences and seminars, and contributed 5 chapters to books. **E-mail:** sridharmirle@yahoo.com, mirlesridhar@gmail.com, sridhar@isac.gov.in ; **Phone:** 91-80-25084451; **Fax:** 91-80-25084475.

