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# Book Availability and Performance Measure in an Academic Library: The Case of the Walter Sisulu University (WSU) Library, Mthatha Campus

Gbade A. Alabi
*Walter Sisulu University for Technology and Science*

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# Book Availability and Performance Measure in an Academic Library: The Case of the Walter Sisulu University (WSU) Library, Mthatha Campus

Gbade A. Alabi
Professor & Head
Department of Library & Information Science
Walter Sisulu University
Mthatha, South Africa

## Introduction

Today's academic libraries according to Simmonds and Andaleeb (1998) are confronted with challenges on several fronts, on-line information providers, multi-media products, document delivery services and other competitive sources of information as well as the evolving technological innovations which are apparently threatening their role and even their very survival. Academic libraries may have to adopt a more strategic orientation in which the creation and delivery of service satisfactions for their users play an important role. In assessing what role academic libraries should be playing, the need to improve and deliver better services based on user needs is emerging as an important theme. At the same time, providing access to information is being advocated as a more desirable measure of the quality of academic libraries. Similarly, academic library users also need to know how to use a library; such as the provision of an introduced Information Literacy or orientation programme. The instructional methods are as varied as the users, ranging from detailed teaching sessions to simple signage. Despite all manners of instruction, there is a nagging sense that a number of patrons still have difficulty using the library.

Services rendered by libraries according to Carvart (1994), are often dictated by the social and political environments in which libraries operate and these help in shaping the services provided. Most of these studies by themselves do not provide solutions but they do however provide background information and a basis for rational decision and policy formulation for better library performance.Availability is often considered as a measure of library effectiveness or overall performance. The user doesn't care that a library owns a million books if he cannot get the one he wants (Saracevic, 1984)

One important indicator of determining the effectiveness of a library system is the extent of the availability of materials sought by its users and one method of measuring this availability is the method known as branching method which was initially used by Kantor(1976) and has been utilised for a number of studies in developed and developing country libraries. These studies include those of Kantor (1984), De Jagers (1991), Revil (1990), Saracevic (1977), Saracevic and Shaw (1977), Lancaster (1990), Chaudhry and Ashoor (1994), Schwartz (1983), Zondi (1996), Goldberg (1998), Nisonger (2007) as well as the one by Steynberg and Rossouw (1993) for the University of Cape Town Medical Library.

For example, Buckland's study at the University of Lancaster (1970) reported that circulation was the major barrier to book availability, and recommended variable loan periods and purchase of duplicate copies to increase availability. To date, the branching method developed by Kantor (1976)during the 1970s has been acclaimed as one of the best known availability techniques and one of the most frequently employed in research.

The fact that Kantor's branching method has been implemented in the United States, Europe, Africa, Asia, the Middle East and Australia testifies to its wide international acceptance (Nisonger, 2007). It was argued that the branching analysis for the combination of effects and the particular measures derived are universally applicable for studying these aspects of library performance (Saracevic et al).This model of studying library effectiveness, according to Saracevic et al is similar to those found in Operations Research, Systems Engineering, and related fields.

One of the advantages of the approach is that it allows longitudinal comparison of performance measures in libraries and at the same time allows bottlenecks to be identified and policy changes or appropriate corrective actions made. On performance measure, most libraries that have carried out similar studies found that about 90% of materials sought by users were acquired by the Libraries. It was against this background that previous studies have attempted to find out what could be the causes of frustration among the 40% to 50% of users (or in the case of WSU's 67%) who cannot obtain the relevant materials out of 90 percent found to be acquired. In doing this, it is expected that Library administrators will be able to find means by which they can eliminate the frustration among library users.

## Methodology

This study is a follow up of that conducted at the University of Zululand by Zondi (1996) which in itself was similar to the one by De Jager (1991). In effect, this study is based on the measurement of the performance of the major areas of the Walter Sisulu University Library, in other words the qualitative aspect of service derivable from the quantitative measurements generated for the study.

In determining the effectiveness of an information service, certain factors were taken into consideration. These factors are largely quantitative and qualitative in nature. The quantitative aspect, the Total Contact Time is probably the best single measure of service rendered in the specific field of book circulation and in-library use.

This study, which analyses the quantitative aspect of the services of the Walter Sisulu University Library services, took the following factors into consideration:

- accessibility which can be determined through the catalogue and other various bibliographic tools produced by the library;
- the availability of materials to users as readily as they need them, and,

- relevance, which depends largely on feedback from users.

In carrying out this study it was assumed that for a user to be frustrated in getting a book, that book must be circulating or else the user will be satisfied.

As in previous studies notably the one by Alabi and Alegbeleye (1984) the total number of samples studied was denoted as W while the numbers of dissatisfactions caused by circulation was denoted as $Dc$ and the number of satisfactions by S. In this case, $W = S + Dc$. For example, if $W = 100$ and $Dc = 40$, then $S = 60$. This value $S = 60$ is regarded as the probability that a book is not circulating, hence a user is likely to find it, i.e. $Pc = 60\%$. Circulation, in a broader sense is assumed to indicate that either the book has been borrowed or is being read in the library. However, there may be cases when a reader can still not obtain a book which is neither circulating nor being read in the library. One possibility might be due to wrong shelving of the book. This factor therefore tends to reduce the satisfaction probability of a book being found.

Other possible factors that can cause dissatisfaction to users are:

(i) that the books being sought are not acquired by the library, and,

(ii) errors due to users in locating the books.

These factors are briefly summarized thus:

$Da$ = dissatisfaction due to the books not having been acquired
$Dc$ = dissatisfaction due to the books being circulated
$Dm$ = dissatisfaction due to the books being mis-shelved, lost etc.
(A book mis-shelved can be regarded as temporarily lost)
$Du$ = dissatisfaction due to user's error (i.e. either not being able to use the catalogue or not being able to locate the books on the shelves)

To each of the above parameters is associated a performance measure. For example:

$Pa$ = probablity that the books have been acquired or a measure of acquisition policy performance.

$Pc$ = probability that the books are properly circulating (i.e. a measure of circulation policy performance).

$Pm$ = probability that the books are not mis-shelved, lost etc. (a measure of library performance).

$Pu$ = probability that users will not err in retrieving books from the Library (a measure of user performance)

Statistically all the above events are regarded as independent, hence the probability of satisfaction (Ps), using Kantor's branching formula, can be defined as a product of all the above probabilities, i.e

$$Ps = Pa * Pc * Pm * Pu$$

This study covered a period of three weeks during the first semester of 2008. Data were collected on requests for books of a specific title/author ('Known item searches') and on the reasons for frustration of these requests. In other words, data were collected on "satisfied and unsatisfied" demands for known books. This exercise does not cover users who found books that did not involve the use of the library catalogue.

The procedure for collecting the data was as follows:

Research students who were requested for the exercise included three students of the Department of Library and Information Science and one postgraduate student in another discipline. To carry out the study, these research assistants stayed near the catalogues in the library in a position where users were not disturbed.

- Questionnaires were distributed to users who were in turn instructed to use the questionnaires as 'worksheets' i.e. they were to record their requests for known books authors and call numbers of 'worksheets'.
- Research students determined the reasons for unsatisfied demands and where necessary extensively rechecked problematic items and verified the decisions. In a number of cases they went to the officer at the circulation desk to enquire about the whereabouts of materials not found on the shelves.

## A Review of Previous Studies

From the result obtained by Nisonger (2007), after reviewing a number of book availability studies over a period of 10 years, it was found that overall availability ranged from 33.8% at the University of Munster, Germany to as high as 83.8% at Cardiff University in the UK. Also, in a study carried out at the University of Lancaster Library by Buckland (1970), it was discovered that about 53% of the requests were satisfied.Similarly at the MIT Science Library (1968), it was found that at least 30% of the requests for materials in this library were unsatisfied while 70% were satisfied.

A number of previous studies amongst which were the ones referred to above, have shown that about 40% to 50% of academic Library users are never satisfied in obtaining what they wanted from the library, whereas libraries have been known to acquire 90% of the materials sought by users.

While Revill (1990), Stelk and Lancaster(1990) made use of shelf list samples to determine availability of sought materials, higher availability rates using these approaches were obtained than other approaches such as the one used for this study, namely availability of materials using the catalogue search method.

According to Zondi (1996), frequent complaints from library users in western countries, of their failure to locate documents they wanted both at the catalogue and on the shelves led researchers during the past 50 years to conduct availability studies to determine the capacity of their libraries in making resources available to users when needed.

Zondi's study (1996), although obtained a satisfaction level of 49.57% for the University of Zululand library users, also highlighted another dimension in the areas of frustration studies in academic libraries, namely:

- percentage of items that were available and those that were not available on the shelf when sought.
- if the variable "type of student" was of any significance in the location of or failure to locate items on the shelves
- educational level, and
- factors responsible for failure to locate item on the shelves

Other studies reported in the literature obtained availability rate of around 54% for the University of Petroleum Resources in Saudi Arabia (1985), 41.3% for the University of Punjab, Pakistan (1991) as well as the 53% for the Islamic University of Malaysia 1994.

The SASOL- Walter Sisulu University Library

The Walter Sisulu University Library which is located immediately after

entering the University campus is housed in new building complex donated to the University by Sassol Group of Companies and Nelson Mandela Foundation. The Nelson Mandela Drive (NMD) campus of the University which was previously known as the University of Transkei currently has a student enrollment of over 5,500 out of 25,000 student population in the three major campuses after the merger of the former Boarder Technikon, and the Eastern Cape Technikon with the former University of Transkei in 2002. The library also consists of open access as well as closed access areas. At the time of collecting data for this study, the Library operated a 14-day loan policy for undergraduate students borrowing up to eight (8) books.

Postgraduate students were allowed to borrow up to ten (10) books at a time for a period of thirty (30) days with a possibility of renewal only once for the same period. Full time teaching staff were allowed to borrow up to a maximum of twenty (20) books at a time for a period of sixty (60) days renewable once for the same period. The library also allowed non academic staff to borrow up to twenty (20) books at a time for a period of 60 days. These loan policies have since been changing over a period of time and it will be important to study the effect of the changes in the policies to determine their effect on the satisfaction level of the users.

## Analysis of Collected Data

The collected data were analyzed using the branching technique developed by Kantor (1984). Using the parameters indicated earlier for this study, a satisfaction level of 33% for the Walter Sisulu University was obtained. This satisfaction level is associated with several factors notable among which is the performance of the circulation system. Table 1 is a breakdown of the data collected for the study.

Table 1: Satisfied and Unsatisfied requests for Books at the Sassol-NMD Library

|  | No. | NOTATION |
|---|---|---|
| 1. Total No. of Requests | 235 | W |
| 2. Number Immediately Satisfied | 78 | S |
| 3. Number Not Immediately Satisfied | 157 | D |
| 4. Distribution of Not Satisfied Requests | 15 | Da |
| ▪ No. of Books Not Acquired by the Library | 120 | Dc |
| ▪ No. Circulating (On Loan) | 12 | Dm |
| ▪ No. of Library Malfunctions | 10 | Du |
| ▪ No. of User Errors | | |

The outcome of any specific requests for a book can be placed in one of the following independent categories defined in the earlier part of this paper: S, Da, Dc, Dm, or Du. Thus the outcomes were reduced to the above mentioned five independent variables. These five independent variables were then represented on a branching diagram (Fig.1 below) following the particular order in which a variable occurs.

## Fig 1 – The Five Independent Variables as Expressed as a Branching Diagram

W = V + D (Total Requests)

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Pa Da (Material Not Acquired)

V=U+Dc Pc

Dc (Material In Circulation)

U=T+Dm Pm Dm (Library Malfunction)

T=S+Du Pu Du (Dissatisfaction Due to User Error)

S (Satisfied Requests)

Similarly:
If T = Number of materials not circulating as a result of user error, i.e. T=S+Du

U = Total no. of materials not circulating as a result of user error and error of misshelving, i.e. U=T+Dm

V = Number of materials acquired by the library, i.e. V=U+Dc

W = Total no. of requests.

Then Pu = S/T
Pm = T/U
Pa = U/V
Pc = V/W

The values for T, U, V and W are calculated as follows:

T =S+Du = 88
U=T+Dm = 100
V=U+Dc = 220
W=V+Da = 235

W is equal to the total number of requests, in this case 235.

Independent probabilities describing this branching process are calculated according to the following:

Pa = V/W (220/235)

Pc = U/V (100/220)

Pm = T/U (88/220)

Pu = S/T (78/220)

Ps = S/W (78/235)

Interpretation of this, as has been explained in the introduction, is as follows:

Pu is a measure of user performance

Pm is a measure of library performance

Pc is a measure of circulation policy performance (including internal library use of books)

Pa is a measure of acquisition policy performance.

From the above parameters: $Ps = Pa \times Pc \times Pm \times Pu$, i.e., $Ps = 220/235 \times 100/220 \times 88/100 \times 78/88$
$Ps = 0.94 \times 0.45 \times 0.88 \times 0.89 = 0.33$

Therefore, Ps, the satisfaction level is 33%.

Four probabilities, Pa, Pc, Pm, and Pu enable the study to isolate the various obstacles to the satisfaction of requests while the fifth probability Ps is the overall probability of satisfaction. Tefko Saracevic et al (1977) illuminated the sequence of branching as used in their paper when they stated that:

Table 2:The Five Independent Variables of the Study and their values

Da = 15

Dc = 120

Dm = 12

Du = 10

S = 33

- The first thing that matters in seeking a given book from a given library is that the library has acquired it; if it has not, nothing else matters. The search must be moved to some other source. If it has acquired the book, other barriers must still be passed before one gets the book, therefore Pa comes first. It represents the factors of sought books which have been acquired.
- If a library has acquired a book, the second thing that matters is that the book is not in circulation or in some other use; if it's "in", other hinderances still remain, thus Pc follows Pa.
- If the book is in, the third thing that matters is that the book is in its proper place (not stolen, not mis-shelved, not in the bindery, etc) i.e. if the library functions properly, the book should be in a known place. If it isn't, nothing else matters. If it is, still another barrier remains; thus Pm follows Pc. It represents the fraction of "in" books which are in proper locations.
- If a book is "acquired" "in" and in its "proper place" the book is available but that does not necessarily mean that the user will get it, depending on how well he can use the catalogue without error. If the user commits an error, then though the book is available, the request is not satisfied; Pu follows other probabilities and it is placed at the last fork of the branching diagram.

The branching diagram for this study is presented in Fig.2 and the satisfaction level for the present study is 78/235 = 33%.

## Fig.2 – Branching Diagram of the Study

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- W= 235 Da =15
- V=220 Dc = 120
- U=100 Dm = 12
- T=88 Du = 10
- S = 78

Furthermore, Table 3 presents a summary of the values of the different probabilities.

Table 3: Measure Of Performance For The Study.

Acquisition Pa = V/W 85%

Circulation Pc = U/V 45%

Library Pm = T/U 88%

Users Pu = S/T 87%

Satisfaction Level = S/W 33%

## Discussion and Summary of Findings

This study was carried out in an academic library in the Eastern Cape of South Africa. As in other studies, attention was focused on four parameters – viz: acquisition, circulation and, indirectly, on a parameter which is concerned with the user's performance at the catalogue and his/her success at obtaining materials from the shelves. The fourth parameter is regarded as the library's administrative processes of maintaining and of keeping track of its collection. All these four parameters were independently measured, thereby making the product of all the performance measures equal to the performance of the overall satisfaction.

From Table 3, 85% of the materials sought by users were acquired by the library. This reveals a high performance of acquisition policy of the library which we know involves not only the librarian in charge, but also the teaching staff of the academic community

The circulation performance obtained is rather low at 45%. This has affected the satisfaction level of the entire library system. This low satisfaction may be attributed to the previous "generous" loan policies of the Library which needs to be reviewed periodically to determine what effect the loan policy would have on the satisfaction level of the library users especially a lower loan period at the postgraduate, and teaching staff levels which may likely increase the availability of library materials to users or a reduction in the number of materials available on loan to these categories of users.

The performance of the library operations is 88%. This reveals that library procedures, policies and directions are adequate. Associated with this performance measure are activities such as shelving, identifying missing books

and proper catalogue directives. But since it was not possible to determine which books were missing because there was no record to indicate this, the 88% performance measure can be attributed to proper shelving and efficient catalogue directives.

A user performance measure (Pu) of 87% was obtained. This shows that only 13% of the books sought and available could not be found by the users because of their own error. It appears therefore from the study that users have a fairly good mastery of library use. This high performance is probably not unconnected with the orientation programme and seminars conducted annually by the library for its users. It will therefore be advisable that this type of exercise be intensified for even greater user performance.

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