Acquisition/Circulation Trend in "Secondary" and "Fringe" Subject areas in the I S I Library

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1. Introductory notes

The transformation of the Indian Statistical Institute (ISI) Library and its confidence in the future are paying off: not only in financial terms—parent organisation has enabled it to spend a sizeable amount of money on the modernization of the Reading Room, Circulation Desk, and other amenities in its splendid newly built building—but also in the growing number of both readers and documents which demand the expansion and modernisation of various activities of the library.

Certain principle should be followed while purchasing the monographs for such a library, as the fund is limited. For enunciating this principle a scientific observation is to be made. And hence ISI library is a sample for the present study.

The argument behind the time limitation made in this study is twofold. As it is expected to guide current acquisition policy, and one cannot usually observe the system for a large number of time periods, so the present one is a model study based on almost recent observations in the ISI Library.

Purpose of this study is to present a data set which has been collected and analysed according to the method of Rouse[3]. It can be used as an aid to acquire monographs. It includes the knowledge of circulation activity (measure of both use and value) as related to inventory for almost all the subject heads in 'Secondary' and 'Fringe' areas over a specific time.

Present price hike in the field of published documents especially the foreign technical ones (vide table 1, fig. 1) and continuous curtailment of budgets specified for the purchase of these documents in any technical library may create a problem to the librarian to organise a judicious user-oriented balanced development of collection. A simple formulation i.e., ACQUISI-TION MODEL which differs from library to library, regarding acquisition policy is expected

to be worked out with the present type of study keeping in mind the financial and manpower resources.

2 Symbolization

Following are the symbols used throughout this study.

Inventory (I)=Number of monographs (English only) acquired.

Time span   =(i) May 1978—April 1979 : Previously catalogued.

(ii) May—July 1979 ; Recently catalogued.

Subjects (S)=Almost all the subject heads are stressed equally excluding those in the prime region.

Circulation (C)=How frequent an Inventory(I) is circulated among its users on loan, since the inception date.

(I_{co})=Number of monographs having the value of C nil.

(I_{e1})=   ,,   ,,   ,,   ,,   unity.

Average price(P)=Average price of one monograph.

(C_{max})=The maximum value of C in respect of a monograph.

3. Representation

The value of Inventory(I) and their corresponding total circulation(C) under each subject head are investigated for both the spans of period. Then the ratio Circulation/Inventory (i.e. C/I) and I_{co}, I_{e1} (monographs) having the value of C nil and unity are calculated and located respectively. These data are then represented both in tabular as well as in geographical (Topological) form.

Subject heads which show highest GAIN (Acquisition & Circulation point of view) in comparison to others are exposed through the respective insets/tables for detailed study.

Maximum number of circulation (C) for a particular monograph within each subject head is represented, as and when available by C_{max} for both the spans.

4 Observation

(a) In case of (I-S) representation, i.e., acquisition point of view, Sociology(SO), and for that of (C/I—S), i.e., Circulation-coupled-Acquisition point of view, Computer Science(C) reached the apex for both the spans.

(b) Besides Sociology(So), following subject heads come in the decreasing order of acquisition [ref. (I-S) representation], for previously catalogued monographs :

Biological Sc.(B)	I=67	Index=239
Computer Sc.(C)	,,=62	,, =221
Physics (Ph)	,,=55	,, =126
Philosophy(P)	,,=48	,, =107
Political Sc.(Ps)	,,=40	,, =142
Electrical & Electronics Engg(EE)	,,=38	,, =134
Geology & Palaentology (GP)	,,=28	,, =100

The corresponding subject heads for recently catalogued monographs are

Computer Sc.(C)	I=24	Index=400
Physics(Ph)	,,=15	,, =250
Electrical & Electronics Engg(EE)	,,=12	,, =200
Philosophy(P)	,,=8	,, =133
Biological Sc.(B)	,,=7	,, =116
Political Sc.(Ps)	,,=6	,, =100
Geology & Palaentology	,,=6	,, =100

(c) In case of Circulation-coupled-Acquisition (C/I-S) representation, besides Computer Science, the following subject heads come in the decreasing order of 'Circulation/Acquisition GAIN' for previously catalogued monographs.

Electrical & Electronics Engg(EE)	C/I = 1.1
Sociology(So)	,, = 0.8
Political Sc.(Ps)	,, = 0.7
Biological Sc.(B)	,, = 0.64
Geology & Palaentology(GP)	,, = 0.61
Philosophy(P)	,, = 0.57
Physics(Ph)	,, = 0.04

Corresponding subject heads for recently catalogued monographs are :

Electrical & Electronics Engg(EE)	C/I = 1
Physics(Ph)	,, = 0.72
Political Sc.(Ps)	,, = 0.5
Geology & Palaentology(GP)	,, = 0.5
Sociology(Sc)	,, = 0.3
Biological Sc.(B)	,, = 0.215
Philosophy(P)	,, = 0.25

(d) I_{co} and I_{c1} (monographs having the value of C nil and unity) in respective I—S representation for both the periods, the leading position is fetched by the same subject head Sociology(So) ($I_{co} = 72$, $I_{c1} = 37$), except in recently catalogued $I_{o1} - S$ representation, where Computer Sc(C) and Sociology(So) reached the lead respectively for $I_{c1} = 12$ and $I_{co} = 7$. These reveal that the monographs of Sociology are in lesser use than those of Computer Sc. at present. But the number of titles acquired under these subject heads do not conform to what the preceding inferential observation warrants proportionately. Rest of the subject heads have shown a random anomaly in this context.

(e) I 's and I_{eo}'s, simultaneously in I—S representations, lead the following sequential orders of the specialities (subject heads) circulated at least once only, for both the spans. The numbers preceding the name of the specialities are the corresponding relative index numbers calculated as $(I - I_{co})/(I - I_{eo})$ min,

Previous	Recent
5.3 Sociology(So)	23 Computer Sc.(C)
3.8 Computer Sc.(C)	9 Electrical & Electronics Engg(EE)
2.8 Biological Sc.(B)	8 Sociology(So)
2.5 Electrical & Electronics Engg.(EE)	6 Physics(Ph)
1.6 Philosophy(P)	3 Geology & Palaentology(GP)
1.3 Physics(Ph)	2 Political Sc.(Ps)
1.2 Geology & Palaentology(GP)	1 Philosophy(P)
1.0 Political Sc.(Ps)	1 Biological Sc.(B)

Foregoing ranking makes it clear that the dynamic nature of the newly acquired stock is quite fluctuating. Computer Sc acquired the top rank and Sociology got degraded from the top to the third position. Apart from this, a number of intertransfer occur within the rank list. This ranking, or better the corresponding index numbers should be resonant to those of the (I-S) representations, for featuring an user oriented balanced readers' service.

(f) Graphical insets—

(i) Considering the I-S representation it may clearly be depicted that within Sociology (So), acquisition of monographs continues to step up its maximum over the speciality (or subject heads "Ecology & Community") for both the spans.

(ii) Considering C/I—S representation, the

Circulation-coupled-Acquisition is more success-
ful (i.e., C/I Ratio high) over the specialities

1. Electronic Computer Data Processing
2. Micro Processor

in case of previously catalogued monographs,
and the corresponding scene for the recently
catalogued ones is

1. Computer Programming
2. Micro Processor

5 Inference

In the evaluation of the activity of the
subject, the most important variable is the Cir-
culation/Inventory Ratio. If this ratio is high,
it indicates that the particular "subject is im-
portant to the library", and the library should
acquire "more monographs" in that area.
Apropos of the present study, an overview to
C/I—S representation (C/I—1 considered as
threshold) draws the attention of acquisition to
the following fields ranked in the decreasing
order

Computer Sc(C)
Electrical & Electronics Engg(EE)
Physics(Ph)
Political Sc.(Ps)/
    Geology & Palaentology(GP)
Sociology(So)
Biological Sc(B)
Philosophy(P)

The observation of the values of I and C/I
simultaneously leads to the fact that compara-
tive utilisation of monographs is boosted up
in Computer Sc., Electrical & Electronics Engg,
Physics, whereas fading exist in Sociology, Bio-
logical Sc., Philosophy and the rest—Political
Sc. and Geology-Palaentology—remain almost
unaffected.

So the Computer Sc., Electrical & Electro-
nics Engg. are to be emphasised while acquir-

ing documents in the Secondary and fringe
subject areas in the ISI Library.

6 Limitations

Distortion effect of seasonal rise and fall
of demand for monographs on certain
specialities, due to the beginning of a new
course or otherwise may create little allowable
tolerance in the ultimate result.

Excluded—Any kind of document other
than monographs. Any other languages
except English ; Reference documents ;
Circulation data relating to reference
use ;   Reader's unsatisfied demand ;
and Samples within the Prime Subject
Areas (Mathematics-Statistics).

Included — Data from the month of
November through December 1979 ;
Lending issue only ;   Monographs
only ; Acquisition through purchase
only ; and Samples in the secondary
and fringe subject areas.

7. Concluding Notes

The modelling of library system in general,
and that of book-use (in statistical method) in
particular, is a unique catalyst in organising
wider library service-settings. It spans all the
phases of the library and is a microcosm of
the problems which confront both well-
organised and less-organised libraries.

By the use of Acquisition/Circulation
Statistics, one can be better equipped to make
right decisions at the right time in optimising
efficiency in framing the proper acquisition
policy. According to P. M. Morse[1], the average
circulation of a monograph during a certain
span of time is related linearly to its circulation
during the immediate preceding period of
interest. The relationship which he found
is $y(t)=a+by$ $(t-1)$, and that describes the

expected future circulation in respect of the past one. As its output at one time period is dependent only on that at the immediate preceding one, it can be termed as Markov Model.

Having derived in a different method, W. B. Rouse[2] had shown in his model that the average demand during the period 't' is linearly dependent on the average demand during the period '(t−1)'.

Newly acquired titles are included in the ISI's 'weekly list of Additions', followed by quarterly cumulations in "Library Bulletin" ; and both are regularly well circulated among the patrons. But all prevalent methods and policies through which the patrons are expected to attract to the "New Additions" do not offer any guarantee that the acquired monographs would be used by them. On the other hand, the acquisition policy based on the readership survey can give commitment to a great extent to the Acquisition/Circulation Librarian in this regard. The titles already acquired but showing static behaviour through circulation statistics, should be well publicised again through the regular media.

The objective of this kind of readership survey is an aid to maintain momentum and to finance further improvements in the right direction, and a drive to boost up its readership as well as membership (for public libraries).

The over-all library service is produced by the super-positon of the different phases of library service in the correct proportions. So each of these phases should be technically engaged on the subject areas in proportion of its' weightage and importance to the library-clientele. The Circulation/Acquisition statistics of the immediate preceding period warrants what subject areas are to be highlighted. Accordingly, more resources, both finance and man-power, are to be spared on it to satisfy the growing need and demand on those subject areas. The Acquisition/Circulation statistics of the preceding period justifies the acquisition policy of the coming period.

This 'readership survey' must be a continuous process in a library. The variation of the demand of the patrons causes the variation in the acquisition of the monographs in the different periods for the different subject areas.

ACKNOWLEDGEMENT

REFERENCES

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2. ROUSE (W B). Circulation dynamics : a planning model. *Journal of the American Society for Information Science.* 25(6) ; 1974 ; 358-363.

3. ———, Tutorial : mathematical modelling of library system. *Journal of the American Society for Information Science,* 30(4) ; 1979 ; 181-192.

TABLE 1 : *Comparative price of foreign technical books in rupees*

	Financial years (Y)				
	1974-75	1975-76	1976-77	1977-78	1978-79
Price of 50 foreign technical books	4382.25	5211.76	5479.72	12047.10	15995.90
Average price of book (P)	87.65	104.24	129.59	240.94	319.92
log P	1.9427	2.0183	2.1126	2.3820	2.5051

TABLE 2 : *(C.I vs Subjectheads) for previously catalogued monographs*
May '78-April '79

Class Nos.	P 100/190	So 301/9	Ps 320	C 518.5	Ph 530	GP 551/560	B 574/590	EE 621.3
I	48	125	40	62	55	28	67	38
C	28	100	28	124	24	17	43	44
C/I	.57	.8	.7	2	0·4	61	64	1.1
Ico	32	72	30	24	42	16	39	13
Ic_1	15	37	5	16	5	6	19	11
Cmax	7	9	6	10	3	3	9	4
I-Ico	16	53	10	31	13	12	28	25

TABLE 3 : *(I vs C) for Sociology ;   Previously catalogued*

Class nos.	301	301.1	301.2	301.3	301.4	301.5	301.6	302/8	309
I	3	2	16	49	37	4	...	1	13
C	4	5	12	48	24	2	...	0	5

TABLE 4 : *(C,I   vs   Subjectheads) for   recently   catalogued monographs*

May—July, 1979

Class Nos.	P 100/190	So 301/9	Ps 320	C 518.5	Ph 530	GP 551/560	B 574/590	EE 621.3
I	8	36	6	24	15	6	7	12
C	2	12	3	26	11	3	2	12
C/I	25	.3	.5	1.09	72	.5	.285	1
Ico	7	28	4	1	9	3	6	3
Ic_1	1	7	1	12	2	3	0	5
Cmax	...	...	2	2	...	1	2	2
$I-I_{co}$	1	8	2	23	6	3	1	9

TABLE 5 : *(I vs C) for Sociology :   Recently catalogued*

Class nos.	301	301.1	301.2	301.3	301.4	301.5	301.6	302/8	309
I	2	1	2	14	11	1	3	0	2
C	2	0	0	7	2	0	3	0	0

TABLE 6 : *(C/I vs S) for Computer Science*

	Class nos.	518.5	518.51	518.53	518.54	518.54 04	518.54 2	518.54 23	518.54 24	518 54 25	518.54 4
R E C E N T	I	2	0	0	6	4	5	0	4	2	0
	C	2	0	0	6	6	2	0	7	2	0
	C/I	1	0	0	1	1.5	.4	0	1.75	5	0
P R E V I O U S	I	1	1	1	15	3	11	1	18	5	1
	C	0	0	1	50	10	16	1	37	3	1
	C/I	0	0	1	3.3	3.3	1.45	1	2.05	6	1

PRICE INCREASE OF FOREIGN TECHNICAL BOOKS

$(Y) - \log P)$ CURVE

LOGARITHM OF AVERAGE UNIT BOOK PRICE $(\log P) \rightarrow$

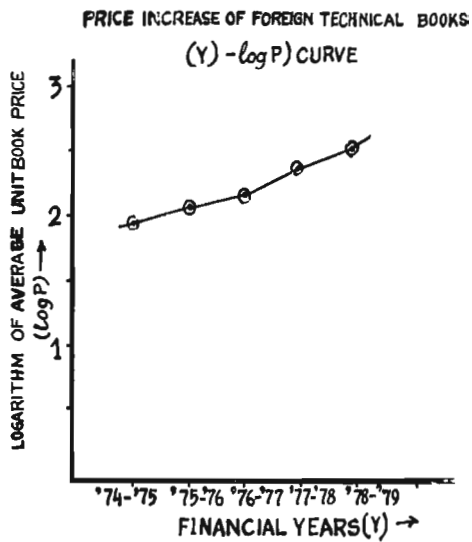FINANCIAL YEARS $(Y) \rightarrow$
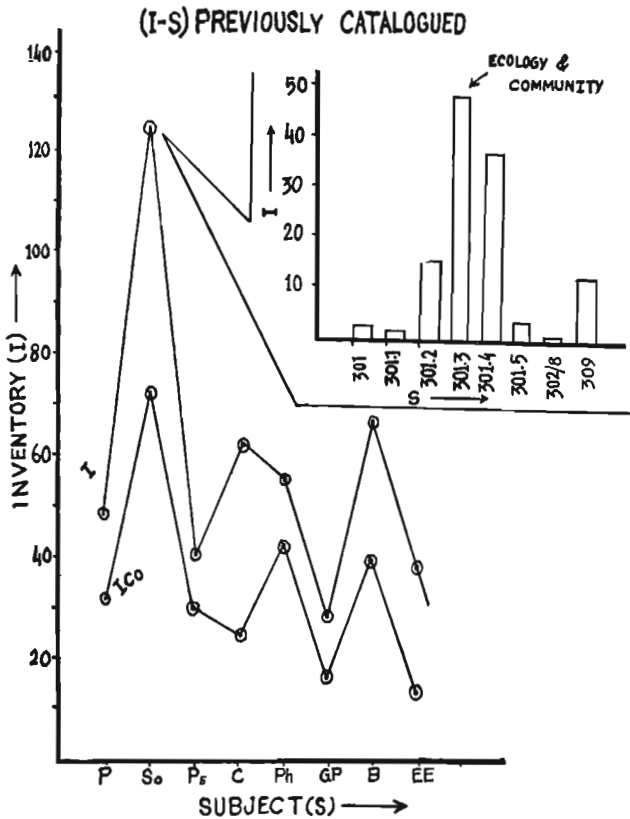
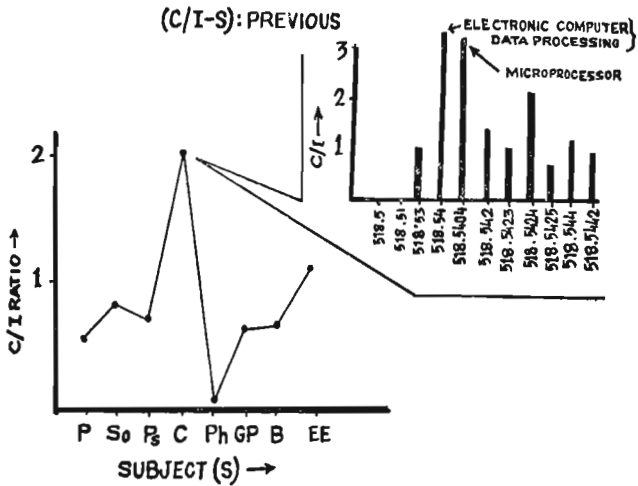'74-'75   '75-'76   '76-'77   '77-'78   '78-'79
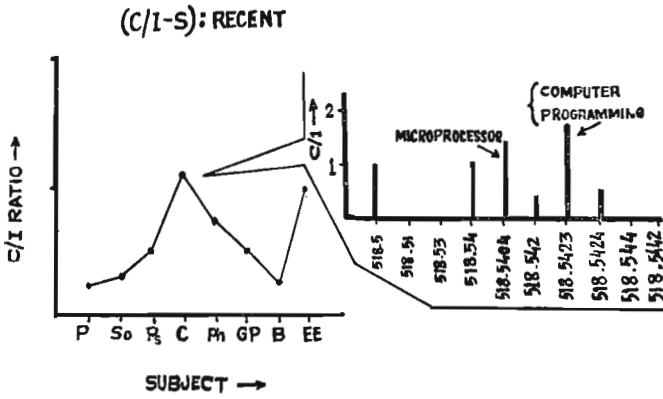
Fig. 1

Fig. 2

(IS) RECENTLY CATALOGUED

Fig. 3

Fig. 4

Fig. 5