Empirical Evaluation of Standing Orders :
Cancellation Decision

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Introduction

The present economic crisis compels the librarians to re-evaluate their concept of collection development, as the inflation affects the library too. New policies are being formulated regarding acquisition to cope with this financial constraint. Continuous efforts are made to attempt weeding, resource sharing, inter-library loan etc. However, the success of a librarian lies in setting up a judicious compromise among the purchasing policy and the resource sharing policies to the quantified extent.

Standing Order (SO) plan, one of the traditional methods of acquiring worth while documents(non-periodic serials) with expected potential future use/circulation, show a trend (vide fig 2, 4 th curve from top) to expend an increasing percentage of the total acquisition budget in succeeding years. This trend confronts the librarian with a problem of the SO expenditure superseding all other plans in the near future. This demands a parametric study on the exist-

ing SOs for deciding what to cancel and what to continue. We are of the opinion that this kind of study should be undertaken as periodical feature and it must be a part of library's statistics.

Standing order plan

Librarians place SO for non-periodic serials (Published under a generic series heading) either with their publishers direct or through some agents, to ensure that a copy of the valued forthcoming titles of their users' interest is procured without delay. The members of the publishing trade while tuning up a project of large voluminous publication, have been accepting pre-publication SO for calculating the expected potential sale along with the print order. Experience reveals that the present situation demands a new professional look. Many such SO series are now available with the local book sellers' ready stock. This offers the facilities of selecting after going through the volumes, and

of procuring any volume of the series instead of the entire series as practiced in SOs. Some SO series which were thought to be of use in future are not used potentially. All these call for a judicious professional decision on continuing economically potential SO titles only.
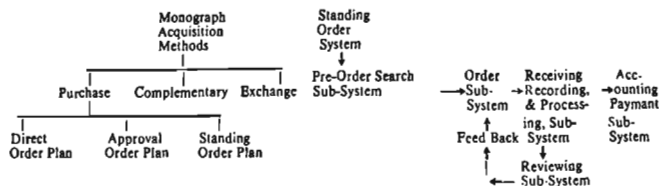
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        Monograph              Standing
        Acquisition            Order
        Methods                System
            |                      |
    _____|_____              |
    |       |       |       Pre-Order Search    Order     Receiving      Acc-
 Purchase Complementary Exchange Sub-System  →Sub-   →Recording,  →ounting
    |                             System  & Process-  Payment
____|____                                ↑       ing, Sub-   Sub-
|        |        |                   Feed Back System    System
Direct  Approval  Standing                ↑
Order Plan Order Plan Order Plan          |       Reviewing
                                          |    ←— Sub-System
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FIG I : *Parametric perview of standing order system in acquisition policy making*

Survey

An empirical study on SO titles of a particular library (present case is that of Indian Statistical Institute) is undertaken on the basis of few parameters to reach some inferences about cancellation decision.

This library has already placed SO on about 75 serial titles, out of which 10 titles are excluded from the present study due to non-receipt of any volume. Information which may better be termed as data, has been collected empirically for the period 1971-1980. Data are collectted for each title in the decision making parameters. In this case we have chosen the following aspects—(1) Vols. received, (2) Circulation, (3) Expenditure incurred—which we thought, are of importance for the present problem since these are correlated. It is obvious that 1 and 3 has got direct positive correlation. Attention may be drawn to table 3 for having an idea about the numerical expression of the degrees of correlation existing between 1 and 2. Co-efficient of correlation comes to +0.59. Hence a perfect and positive correlation exists among the three. So 1 and 2 are also corre-

lated. But here lies the responsibility of a librarian who will fit all these parameters:into a pre-formulated relation, for a judicious SO collection development. For establishing a mathematical compromise between these three parameters the librarian should design a rationally planned methodology for evaluating SOs. One such method which, we hope, offers the most compact solution is followed here.

Table 1 enumerates the set of absolute data relating to the parameters against each title. Few mathematical operations of preliminary nature are also done and tabulated under other columns. Table 2 features the time series data against each parameter, and here also few mathematical operations are carried out under additional columns for a better interpretation of the situation. Curves on fig. 2 will present an empirical idea about the relative trend of circulated SO volumes and the total volumes acquired under the same plan. Logarithmic expenditure trend is mapped on the same figure by the respective curves. A comparative picture of the budget amount in total and that expended on SO only, will be clear from the top and

bottom curve. These show that with the in-
crease in budget amount, expenditure on SOs
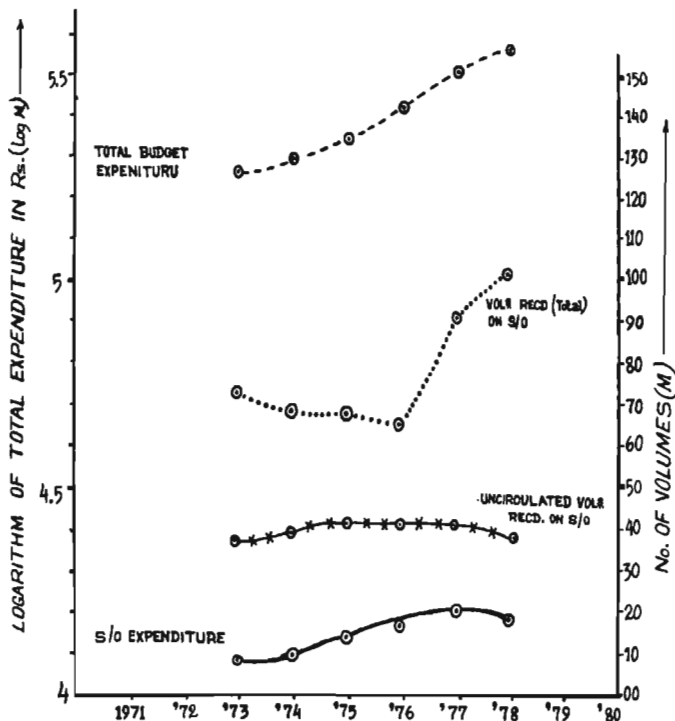is also increased, but it is under little control
during last 2 or 3 years.

Fig. 2 :   5yr. Running average trend for expenditure, vols. recd / circulated,
etc.   On multiple scale chart.

Schematic analysis

To identify the titles which are to be conti-
nued or discontinued, we have framed out an
enumerative methodology based on primary
parameters viz., no. of vols. recd., percentage
of circulated vols., and the average price per
volume for SO titles. Each title is credited with
the weights according to the following scheme.

	Weights	
Circulation (i.e,%of vols circulated)	45 (max)	

For 80% to 100% ... 45		
For 40% to 79% ... 30		
For 20% to 39% ... 15		
For 0% to 19% ... 0		

Average Price per Vol. $(M_{t_{av}})$ 36 (max)

Rs 0 to Rs 100 ... 36	
Rs 101 to Rs 200 ... 26	
Rs 201 to Rs 300 ... 15	
Rs 301 + ... 0	

Frequency of Publication   19 (max)

(=Vols Recd.)

Recd 10 vols+ ... 19	
Recd 6 vols to 9 vols. 9	
Read 0 vols to 5 vols. 0	

(Total) 100

The data as available from the relevant columns of table 1 against each title are analysed after necessary mathematical operations, where required, and then matched with the above scheme for estimating the cumulated weights. These are put against each title in the concluding column of the same table. The title which scored highest weightage 100 is "Collected writings of John Meynard Keynes", (sl. no. 37) while the lowest weightage 19 is shown by "Methods of experimental physics"

(sl.no. 52). In the decreasing order of weightage, the titles rank like this :

Scorings	Sl. no. of the titles
100	37
90	30, 54
81	11
80	2, 31, 38
75	32, 58
71	21, 29, 53
70	46
69	17
66	63
65	9, 33, 41, 44, 60
64	1, 4, 43, 49
60	14, 39, 48
56	7, 8, 36, 55, 62
Median——x	
54	16, 19,40, 57, 64
50	13
49	12, 45, 59
45	5, 24, 37, 34, 47, 50, 51
39	15
37	42
36	25
35	10
34	20, 56, 65
30	6, 22
26	3, 28, 35, 61
24	18, 23, 26
19	52

It is clear from the foregoing ranking that the *median* of the scorings lies in between 54 and 56. Let us take it as 55, which is slightly above the *mode* and *mean*. These show that the distribution has the tendency of being negatively skewed.

Inferences

We propose the scoring 55 as the *Critical Discard point*. But in some special cases, the librarians are to apply discretionary power of continuing titles having acquisition potentiality from other points of views like—reference/archival importance, local history, expected potential use in very near future, even though they are residuals, i.e., come under the pre-decided cut off point. In the present case, the following titles bearing sl. nos. 16, 40, 64, 45 and 34 (in order of decreasing score) are thus to be kept. Ultimately our study suggests the titles scoring above 55 and the aforesaid five more specially important ones, i.e., 37 in total (about 57% of the total titles) should only be continued on Standing Order in the library without any risk. Even then the decision maker has the right to take a step ahead if the risk benefit comes within the economic limit of the organization.

Further observation will have to be made for segregating some titles, the extreme use of particular volumes of which ultimately skews the cumulated circulation frequency for the titles. The specific volumes of these series titles are to be procured after physical inspection through direct order. Other such titles belonging to the cancellation list are to be made available, as and when asked for by the user, through the library resource sharing mechanism.

The titles which show apparent termination on around 1974 (eg. sl. nos. 3, 21, 53) are to be cancelled, as they are found to have very low productivity. Those showing their apparent termination from production point of view (eg, sl. nos. 5, 7, 11, 18, 19, 22, 44, 59) during the period under study are to be kept under intensive supervision for the years to come. Enquiry should be made with the suppliers about the series which seized to come within the observation period.

Conclusion

First point to note is that the decision making Critical Discard Point (55 in present case) may freely be chosen any where in between the maximum 100 and the minimum 0 as the particular situation demands. Distribution of total weights may similarly be repacked for the respective parameters on which the individual librarian likes to distribute his/her comparative emphasis.

The library records and statistics should permit a ready or little expeditious data on different aspect of this kind of study. We, from our own experience, are in favour of maintaining a complete separate set of records for the SOs, showing vols. recd. against each title/series, price expended on each title, call no assigned by the processing unit, etc. These will facilitate an analytical study on the problem. It will not be exaggerated, if one argues to maintain an annual closing of library statistics for SO titles separately.

An attempt should preferably be made to keep all the volumes of a SO series in one position, under a generic class no, as we have seen the series kept this way were better used in comparison to those scattered under different specialities. A set of subject analyticals and author-title added entries may, however, be merged in the respective catalogues to satisfy different approaches of the users. Newly acquired SO volumes should get special publicity through the library's media.

In practice, the set of SO series in any study is liable to change as new series appear on SO, as some die or as others change the focus of their scientific interest. So once the re-

quired percentage (here it is 57%) of Sos to be continued is decided it will need regular review and revision. Hence this kind of evalu- ative study must be a continuous process. At least every fifth year, the librarians are to weigh the SO titles parametrically.

TABLE 1 : *Descriptive data on Standing Order Titles*

Abbreviated Series Title with Class no.	Time Span	No. of Vols Recd (N_i)	Cumul Circl Frq (C_i)	No. of vols with $C_i=0$	% of Acqd Vols Circula- ted	Average Price/ Vol. (in Rs)	Calculated Total Parametric Weights
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Adv in Agronomy (6131.1)	'71-'80	10	11	4	60	248	64
2. Adv in Appld Mechanics (620.1)	'73-'78	7	8	1	85.7	135	80
3. Adv in Astronomy & Astrophysics (523)	'71-'73	3	0	3	0	144	26
4. Adv in Atomic & Molecular Physics (539)	'71-'80	10	0	10	100	313	64
5. Adv in Biol & Medical Phys (574.191)	'71-'78	4	4	2	50	234	45
6. Adv in Botanical Res (580.72)	'71-'80	4	6	2	50	331	30
7. Adv in Communication System (006	'71-'76	2	1	1	50	138	56
8. Adv in Comparative Physio- logy & Biochem (574.19)	'71-'79	4	3	2	50	194	56
9. Adv in computers (651.26)	'71-'79	8	9	2	75	195	65
10. Adv in Control Systems (629.8)	'72-'79	6	1	5	16.6	193	35
11. Adv in Ecological Res (574.5072)	'71-'75	3	4	0	100	93	81
12. Adv in Electronics & Electron Phys (537 5)	'71-'80	7	5	22	21.4	269	49
13. Adv in Exptal Social Psychology (301.15)	'71-'79	7	2	5	28.5	144	50
14. Adv in Food Res (613.2072)	'71-'79	10	2	8	20	173	60
15. Adv in Genetics (575.1)	'77-'80	7	1	5	28.5	209	39
16. Adv in Geophysics (551)	'72-'79	7	6	4	42.8	235	54
17. Adv in Human Genetics (613.9)	'71-'80	9	19	1	88.8	257	69
18. Adv in Hydroscience (532.1)	'71-'78	7	1	6	14.2	232	24
19. Adv in Magnetic Resonance (539.7)	'71-78	7	0	7	100	216	54
20. Adv in Marine Biology (574.92)	'71-80	10	1	9	10	238.9	34
21. Adv in Morphogenesis (574.4)	'71-'74	2	3	0	100	164	71

Table—(conted).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
22.	Adv in Nuclr SC & Technology (621.48)	'73-77	4	1	3	25	238.1	30
23.	Adv in Protein Chem (547.75)	'71-'80	9	0	9	0	237.7	24
24.	Adv in Quantum Chem (541.383)	'71-'79	5	2	3	40	246.6	45
25.	Adv in The Study of Behaviour (150.1943)	'71-'79	5	0	5	3	93.6	36
26.	Adv in Virus Research (576)	'71-'80	8	1	7	12.5	246	24
27.	Alkaloids : Chem & Physiology (547.72)	'72-'79	5	1	3	40	269.6	45
28.	Annual Report in Medicinal Chemistry (615.1)	'72-'80	5	0	5	0	140	26
29.	Annual Rev of Anthropology (572)	'77-'80	3	5	0	100	155	71
30.	Annual Rev of Biochem (574.19)	'71-'80	10	25	2	80	166.7	90
31.	Annual Rev of Genetics (575.1)	'71-'80	9	16	1	88.8	122.5	80
32.	Annual Rev of Physiology (574.1)	'71-'80	10	10	4	60	133.8	75
33.	Annual Rev of Psychology (150.4)	'71-'80	9	10	3	66.6	133.4	65
34.	Applications of Math (519)	'79-80	5	3	2	60	287	45
35.	ppld Math & Mech (510/530)	'71-80	4	0	4	0	171.2	26
36.	Appld-Mathematical Sc Ser (510)	'71-'80	4	3	1	75	102.5	56
37.	Collected Writings of John Meynard Keynes (330.4)	'71-'80	17	52	0	100	54.5	100
38.	Current Topics in Developmental Biology (574.3)	'75-'80	8	7	1	87.5	176.3	80
39.	Ency of Industrial Chemical Analysis (660.3)	'73-'80	5	5	0	100	287	60
40.	Grund Lehren Der Math Und Wissen (510)	'79-'80	9	15	0	100	374.8	54
41.	Harvey Lectures (610.4)	'72-'80	9	4	4	55.5	139.6	65
42.	Int Geophysical Ser (551)	'71-'80	7	7	5	28.5	227.2	37

Table—(conted)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
43. Int. Rev of Cytology (574.87)	'71-'80	37	19	20	45.9	277.1	64
44. Int Rev of Res in Mental Retardation (132.2)	'71-'78	7	3	4	42.8	154.2	65
45. Int School of Physics "Enrico Fermi" (539)	'71-'79	24	13	13	45.8	332	49
46. Lec Notes in Bio-Math (574)	'79-'80	16	6	10	37.5	57.4	70
47. Lec Notes in Math (510)	'79-'80	202	19	180	10.8	106.9	45
48. Math in Sc & Engg (510)	'71-'79	63	28	45	28.5	153.3	60
49. Methods in Computational Phys (518.5)	'71-'80	10	6	6	40	280.9	64
50. Methods in Enzymology (547,758)	'71-'80	48	15	39	18.7	146.7	45
51. Methods in Micro-Biology (576)	'71-'80	14	5	12	14.2	148.3	45
52. Methods of Exptal Phys (530)	'71-'80	11	2	9	18.1	307.6	19
53. Probabilistic Methods in Appld Math (519.1)	'72-'74	2	2	0	100	180.5	71
54. Probability & Mathematical Statistics (510)	'72-'80	29	86	0	100	182.1	90
55. Progr in Exptal Personality Res (137.8)	'71-'80	4	4	2	50	136.5	56
56. Progr in Nucleic Acid Res & Molecular Biology (574.192)	'71-'80	12	6	10	16.6	203.5	31
57. Psychology of Learning & Motivation (154.4)	'71-80	9	2	7	22.2	160.3	54
58. Pure & Appld Math (510)	'71-'80	46	29	19	58.6	190.2	75
59. Pure & Appld Phys (530)	'71-'77	13	6	8	38.4	221.1	49
60. Selected Wks of J. L. Nehru (923.254)	'73-'80	11	6	6	45.4	79.09	65
61. Social Trends (309.142)	'76-'80	5	0	5	0	104.8	26
62. Standard Methods of Clinical Chem (616.075)	'71-'80	2	2	1	50	132	56
63. Tata Instt Lec on Math & Phys (510)	'79-'80	4	3	1	75	20	66
64. Transfer of Power 1942-47 (325)	'71-'80	8	18	0	100	327.6	54
65. Vitamins & Hormones (574)	'71-'80	11	1	9	18.1	206.9	34

TABLE 2 :   *Time Series Data as cumulated for different Parameters*

Year	Total No. of Vols. Acqrd. (V_s)	No. of Vols Recd. on SO (N_s)	5 yr. Running Average of N_s	Value of N_s in % of V_s	Budgeted expenditure in Rs. (M_s)	SO Expenditure per year in Rs. (M_s)	Value of M in % of M_s	5 yr. running average of M	Average cost per vol. in Rs. (m_{as})	Circln. Frqncy (Cumul) for SO (C)	No. of Vols. with C→O (N_{as})	5 yr. Running Average of N_{as}	N_{as} in % of V_s	Vols Circulated at least once only in % of V_s of N_s
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1971	1641	77		4.6	2,14,971	9,996	4.65		131	105	31		1.8	59.7
1972	1275	72		5.6	1,70,850	10,365	6.06		134	58	32		2.5	55.5
1973	1073	71	72.4	6.6	1,50,220	11,295	7.51	6.94	140	57	35	37.2	3.2	50.7
1974	996	75	68.4	7.5	1,54,380	15,969	10.34	6.8	155	44	49	39.6	4.9	34.6
1975	1533	67	67.4	4.3	2,45,280	15,081	6.14	6.41	160	57	39	41.6	2.54	41.7
1976	1663	57	65.8	3.4	2,77,900	11,062	3.98	5.93	167.1	44	43	41.4	2.58	24.5
1977	2479	67	90.4	2.7	3,30,000	16,913	5.12	5.03	133.11	45	42	41	1.69	37.3
1978	2641	58	101.0	2.1	3,85,000	15,674	4.07	4.34	145.77	33	34	38.4	1.28	41.3
1979	1707	203		11.8	4,20,000	24,565	5.84		246.04	58	49		2.75	76.8
1980	1857	120		6.4	4,30,000	11,585	2.69		231.55	21	26		1.40	78.3

TABLE 3 : *Correlation between SO Acquisition and Circulation Frequency.*

Years	Index Nos. of No. of Vols(N_r) Recd on SO (X)	5 yr Running Average	Deviation of corresponding indices from M A (d_{ix})	*d_{ix}	Index of Circln Frq for SO (C) as from T-2 (Y)	5 yr Running Average	Deviation of corresponding indices form M·A (d_{oy})	*d_{iy}	Dix·diy.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1971	100				100				
1972	92.2				55.2				
1973	92.2	93.76	−1.56	2.43	54.2	61.1	−6.9	47.61	10.7
1973	97.4	88.56	+8.84	78.14	41.9	49.4	−7.5	56.25	−66.3
1975	87.0	57.52	+29.48	869.07	54.2	47.0	+7.2	51.84	212.2
1976	74.0	87.14	−13.14	172.65	41.9	42.4	−0.5	0.25	6.5
1977	87.0	117.38	−30.38	922.94	42.8	45.1	−2.3	5.29	69.8
1978	75.3	131.14	−55.84	3118.10	31.4	38.24	−6.8	46.24	379.7
1979	263.6	Coefficient of Correlation			55.2				
1980	155.8	r = +0.59			19.9				

* r is calculated as,

n = no. of moving average = 6

$$\sigma x = \sqrt{\frac{\sum d'_{iy}}{n}} = \sqrt{\frac{5163.33}{6}} = \sqrt{860.555} = 29.33$$

$$\sigma_y = \sqrt{\frac{\sum d'_{iy}}{n}} = \sqrt{\frac{207.48}{6}} = \sqrt{34.58} = 5.88$$

Coefficient of correlation $(r) = \dfrac{\sum (d_{ix} \cdot d_{iy})}{n. \sigma_x. \sigma_y} = \dfrac{612.6}{6.29.33.5.88}$

$$= \frac{612.6}{1034.7} = +0.59$$

Correlation is perfect and positive.

TABLE 4 : *Time series data further analysed.*

Year	Logarithm of SO Expenditure (in Rs) (log M_s)	5 year Running Average of log M_s	Logarithm of Budget Expenditure in Rs. (log M_b)	5 year Running Average of log M_b	Circulation Frequency per vol. C $C_v = \dfrac{C}{N_r \cdot N_s}$ *	C_v per Year of Stay on Shelf
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1971	3.9999		5.3322		2.28	.228
1972	4.0154		5.2324		1.45	.161
1973	4.0527	4.0899	5.1767	5.2630	1.58	.181
1974	4.2031	4.0986	5.1884	5.2864	1.69	.241
1975	4.1784	4.1420	5.3894	5.3436	2.03	.338
1976	4.0437	4.1696	5.4454	5.4254	3.14	.628
1977	4.2280	4.2070	5.5185	5.5124	1.80	.450
1978	4.1950	4.1841	5.5855	5.5612	1.37	.450
1979	4.3903		5.6232		0.37	.185
1980	4.0636		5.6335		0.22	.220