A PRACTICAL M.I.S.: SUGGESTED,
TESTED AND APPLIED

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ABSTRACT

With the present increase in computer processing accessi-
bility, the development and operationalizing of marketing
information systems has become feasible for all firms. An
M.I.S. based primarily on invoice information is presented
as are data from its implementation. Results indicated
that the system provided information immediately useful
for making marketing strategy decisions.

INTRODUCTION

An examination of sales costs for 1980 and 1981 revealed
an alarming trend: Within most of the industries consid-
ered the costs of selling were apparently increasing
faster than total revenues. (Sales & Marketing Manage-
ment 1981, 1982). In other words, to a firm facing such
cost and revenue curves, it is no longer sufficient to
concentrate on expanding sales. In fact, the firm that does
concentrate singly on sales will find that increased sales
revenues will literally and consistently result in de-
creased profits. Obviously this is contradictory to tra-
ditional marketing theory.

In the past, both sales training programs and corporate
marketing philosophies have suggested that one of the
primary objectives of a firm should be to maximize sales.
Thus, sales personnel were instructed to cultivate both
customers and orders; considerable time was spent devel-
oping positive relationships with clients on the assump-
tion that such would produce increased sales. Sales peo-
ple's orientations were towards amount of sales, and their
performances were based on--and bonuses awarded because
of--achieving various levels of sales.

Within the present environment, however, a strategy of
sales maximization will not be effective. Rather than
concentrating on increasing the quantity of sales, a firm
would be better advised to emphasize increasing the
quality of its sales.

Quality = Profitability

In its present context, quality of sales means profitabil-
ity of sales or, more accurately, profitability of the
particular product items sold and marketed. What are
universally applicable--and only slightly less ignored or
unappreciated--are the differences, often extreme, in con-
tributions to profit that result from various items in a
firm's product mix. Very simply, some items in a firm's
product mix are more profitable than others. It becomes
the responsibility of the firm to determine that profita-
bility and then to base its marketing strategy on those
determinations.

Surprisingly, while many firms are aware of their overall
profitability, they are very much unaware of profitability
by other variables--e.g., by customer, by geographic re-
gion, and most importantly, by product item. Yet deter-
mination of such profitability segments may be a rela-
tively easy matter for many firms, particularly for small
manufacturers, even if the number of their product
offerings is considerable.

Essentially the determination of segmentation by profit-
ability revolves around the acquisition and effective use
of information. With few exceptions, this information
may already be available within the firm. Thus, it be-
comes more a matter of merely processing already-existing
data than of acquiring or gathering new information. Of
course, what has just been described is a marketing in-
formation system. What is going to be suggested is that
every firm, regardless of size, needs to develop and
utilize just such an M.I.S.

Certainly the strategy of allocating marketing efforts
according to profitability analyses is not a particularly
new one--such was formally suggested at least 20 years
ago (Sevin 1965). Nor is the use of an M.I.S. to facili-
tate that analysis a unique suggestion. What may be new
and unique, however, is the present ease with which firms
can have access to computer systems to implement an
information system.

In addition to the information itself, a successful M.I.S.
requires both the appropriate theory to underly it and
effective technology to operationalize it. The current
proliferation of computers--micros, minis, and main
frames--effectually means that any firm, whatever its
resources, need not be stymied by inaccessible technology.
This paper will suggest that the theoretical foundation
is also within reach of most firms.

THE CALIFORNIA SURVEY

One note of caution: The research effort that is de-
scribed here was not undertaken to provide for the formal
testing of market information system theory. Rather, as
the title implies, its orientation was purposely practical
in nature: an attempt to show that a practical M.I.S.
can be designed and implemented, and that such a system
can indeed provide results useful for making marketing
strategy decisions.

Methodology

The research examined invoice data from several marking
device manufacturers within the State of California.
Marking devices refer to items which are used to mark or
identify other things, such as rubber or plastic stamps,
printing plates, marking machines, stencils, badges, etc.
In this case, the industry is concentrated in or near the
greater Los Angeles and greater San Francisco areas: 76%
of California industry members were apparently located
within these two areas. In all, five firms were studied,
three from the greater San Francisco area and two from
the greater Los Angeles area. In addition to a sampling
of firms, a sampling of dates was included. Based on the
past year's sales fluctuations, four months were chosen--
January, March, July and October. Within each month, five
days were systematically chosen such that each week was
represented at least once. In this way, it was reasonable
to expect that these 20 days would be representative of
the kinds of sales and situations present during 1980.

Seven pieces of information were collected from each in-
voice: date of order, type of customer, geographic lo-
cation of customer, type of item ordered, quantity
ordered, price per item, and any discount granted. In
addition, profit per item--in terms of profit margin--
was obtained from management.

Results

In all, more than 8,000 invoices were examined. Results
indicated that, on both theoretical and practical levels,
at least two generalizable and significant conclusions
were apparent:

1. Relevant information was easily accessible. With the exception of profit margin data, which was available from management, all information was literally taken straight from firms' invoices.

2. Significant profit segments were apparent. Not only were these segments recognizable, but also it was possible to use them to suggest marketing strategy decisions.

Each of the following strategy suggestions was based on specific results from the 1980 survey; each was statistically supported by data from that survey; and though this study concentrated on California, each suggestion could feasibly be considered for any geographic area.

Segmentation Based on Profit Consideration

It would be rare for a firm, let alone an entire industry, to be faced with an undifferentiated marketplace--and the marking device industry is no exception. Certainly the needs of consumers will vary across customer groups--e.g., the needs of bankers cannot be satisfied in the same way as those of wholesalers. So too, the profit from doing business with bankers may be significantly different from that from wholesalers or any other customer for that matter. In fact, results from analysis of both customer type and item type indicated just such segmentation possibilities.

Type of customer. Table 1 presents the average profit per item generated by each type of customer. Analysis of variance (Table 2) indicated that profit per item varied significantly across customer categories (p < .001).

TABLE 1
Profit per Item Ordered by Type of Customer

	Average Profit	Standard Error	n
Utilities	5.06	.76	154
Banks and S&L's	11.42	5.63	96
Paper Houses	5.53	.27	576
Government	6.49	1.83	202
Manufacturers	5.78	.32	2,405
Retailers	3.56	.36	424
Small Businesses	5.45	.41	297
Wholesalers	2.28	1.05	505
Walk-In business	5.58	2.58	3
Miscellaneous/Other	8.36	1.56	145
Total	5.36		4,807

TABLE 2
Analysis of Variance of Profit per
Item by Customer Type

Source	df	Sum of Squares	Mean Square	F-Value
Between Groups	9	11,708.30	1,300.92	4.37*
Within Groups	4,797	1,426,687.52	297.41	
Total	4,806	1,438,395.82		

*p < .001

What this means is that while all men may be created equal, all customers certainly are not. Some are of higher "quality" than others; that is, doing business with them is simply more profitable. Ideally, a firm should strive to have a distinct marketing mix for each customer type, to have a marketing plan tailored to the individual needs of each of its different consumer segments. With small-sized firms like these were--and perhaps medium-sized as well--such extensive marketing customization may not be feasible. It is quite feasible, however, that:

1. Specific marketing approaches should be developed for the highest quality customers.

2. The attention and effort given to customers should be proportional to their profitability.

In this study, it was possible to group customer types according to profitability as follows:

High Quality	- Miscellaneous/Others }	($8.36)
Medium Quality	- Paper Houses } - Government } - Manufacturers } - Small Businesses }	($5.75)
Low Quality	- Retailers } - Wholesalers }	($2.86)

Type of item ordered. Depending upon the study cited or the industry examined, the rate of new product and new business failure has varied between 50% and 90%. At the same time, it is virtually impossible for a firm which does not innovate, does not continually introduce more satisfying products, to survive. This apparent dilemma should alert management to the feasibility of at least two distinct marketing strategies.

First, it is a requisite to continually examine the productivity of all product offerings. As was seen in this study, that productivity is likely to vary considerably across products. Table 3 presents the average profits generated by each of twelve product categories; and analysis of variance of those data (Table 4) suggested that profit did indeed vary significantly across those product item groups (p < .001).

TABLE 3
Profit per Item Ordered by Type of Product

	Average Profit	Standard Error	n
Rubber/Plastic Stamps	5.17	.29	2,583
Porous Stamps	3.35	.30	127
Surface Marking Machines	26.97	17.22	12
Metal Marking Tools & Dies	7.97	1.21	124
Indent Marking Machines	9.66	2.20	17
Nameplates & Engraved Signs	5.95	1.24	485
Marking Inks	6.92	.70	387
Embossing, Notary & Corp. Seals	18.60	12.85	200
Stencils, Stencil Equipment	5.50	.38	200
Badges, Tags & Coins	1.21	.51	63
Other Marking Devices	5.10	1.13	287
Other (non-marking items)	3.66	.69	489
Total	5.37		4,802

TABLE 4
Analysis of Variance of Profit per
Item by Item Type

Source	df	Sum of Squares	Mean Square	F-Value
Between Groups	11	15,899.40	1,445.40	4.87*
Within Groups	4,790	1,422,418.83	296.96	
Total	4,801	1,438,318.23		

p < .001

Second, no firm has unlimited resources; therefore, it is only logical that it should get the most out of those resources that it feasibly can. This means it is just as important to drop low productive products as it is to introduce high potential ones. In this study, it was possible to group products according to profitability

TABLE 5

Number of Orders by Customer Type and Item Type

Count Item Pct. Customer	Utilities	Banks/S & L's	Paper Houses	Government	Manufacturers	Retailers	Small Business	Wholesalers	Walk-in	Misc/Other	Total
Item Ordered:											
Rubber/Plastic Stamps	81 1.6 42.9	324 6.3 81.6	590 11.5 67.4	552 10.8 78.5	1561 30.5 53.0	325 6.3 62.1	241 4.7 55.8	1345 26.2 70.9	3 .1 75.0	103 2.0 55.4	5125 62.9
Porous Stamps	3 .8 1.6	6 1.5 1.5	42 10.6 4.8	46 11.6 6.5	106 26.7 3.6	42 10.6 8.0	34 8.6 7.9	112 28.2 5.9	0 0 0	6 1.5 3.2	397 4.9
Surface (ink) Marking Machines	0 0 0	0 0 0	2 15.4 .2	2 15.4 .3	7 53.8 .2	0 0 0	2 15.4 .5	0 0 0	0 0 0	0 0 0	13 .2
Metal Marking Tools & Dies	3 2.4 1.6	1 .8 .3	16 12.7 1.8	5 4.0 .7	89 70.6 3.0	2 1.6 .4	3 2.4 .7	6 4.8 .3	0 0 0	1 .8 .5	126 1.5
Indent Marking Machines	2 11.8 1.1	0 0 0	3 17.6 .3	0 0 0	7 41.2 .2	0 0 0	2 11.8 .5	0 0 0	0 0 0	3 17.6 1.6	17 .2
Nameplates & Engraved Signs	31 3.8 16.4	54 6.6 13.6	97 11.8 11.1	65 7.9 9.2	259 31.5 8.8	45 5.5 8.6	44 5.4 10.2	205 24.9 10.8	0 0 0	22 2.7 11.8	822 10.1
Marking Inks, special purpose	8 1.9 4.2	0 0 0	25 5.9 2.9	8 1.9 1.1	273 64.4 9.3	18 4.2 3.4	27 6.4 6.3	46 10.8 2.4	1 .2 25.0	18 4.2 9.7	424 5.2
Embossing, Notary & Corporate Seals	5 10.0 2.6	1 2.0 .3	6 12.0 .7	1 2.0 .1	10 20.0 .3	4 8.0 .8	6 12.0 1.4	17 34.0 .9	0 0 0	0 0 0	50 .6
Stencils & Stencil Equipment	1 .5 .5	1 .5 .3	6 2.8 .7	2 .9 .3	128 60.7 4.3	23 10.9 4.4	14 6.6 3.2	31 14.7 1.6	0 0 0	5 2.4 2.7	211 2.6
Badges, Tags & Coins	5 6.5 2.6	1 1.3 .3	18 23.4 2.1	2 2.6 .3	18 23.4 .6	7 9.1 1.3	8 10.4 1.9	12 15.6 .6	0 0 0	6 7.8 3.2	77 .9
Other Marking Devices	6 2.1 3.2	0 0 0	16 5.6 1.8	3 1.0 .4	181 63.1 6.1	23 8.0 4.4	16 5.6 3.7	36 12.5 1.9	0 0 0	6 2.1 3.2	287 3.5
Other	44 7.3 23.3	9 1.5 2.3	55 9.1 6.3	17 2.8 2.4	307 50.7 10.4	34 5.6 6.5	35 5.8 8.1	88 14.5 4.6	0 0 0	16 2.6 8.6	605 7.4
Customer Total	189 2.3	397 4.9	876 10.7	703 8.6	2946 36.1	523 6.4	432 5.3	1898 23.3	4 .0	186 2.3	8154 100.0

Chi Square = 947.80 with 99 d.f., p < .001

as follows:

High Quality	– Rubber/Plastic Stamps – Metal Marking Tools – Indent Marking Machines – Marking Inks – Stencils & Stencil Equipment – Nameplates & Engraved Signs – Other Marking Devices	($5.54)
Medium Quality	– Porous Stamps – Other (non-marking items)	($3.60)
Low Quality	– Badges, Tags & Coins	($1.21)

Since walk-in business appeared to be negligible, most sales were evidently generated by marketing efforts, whether from sales personnel or through advertising. Certainly it would be reasonable for the marketing people within the firm to be aware of these product priorities; and perhaps just as reasonable if their efforts, when possible, were allocated in proportion to the profit contributions of the product types.

Multivariate Relationships

In addition to the previous univariate examinations, there are many multivariate relationships which would be of interest to a firm assessing its marketing position. For instance, one could examine whether seasonal fluctuating were present within customer grouping or product item classifications; so too whether profitability varied for customers or products within specific geographic areas; or whether a relationship existed between customer type and item type. This latter relationship was used to illustrate the types of analyses which are feasible.

It was reasonable to speculate whether certain customers would be more likely to demand some product items than others. Table 5 was prepared to examine that possibility. It summarizes the number of orders requested during the sampling period (estimated demand) by customer type and item type. A chi-square analysis applied to the data indicated that an apparant relationship did exist between the two variables ($p < .001$).

From a practical standpoint, the table can be read in two ways: Reading across the table, one can observe segmentation possibilities for particular marking device items. Moving down the columns, one can examine the needs of specific customer types.

Considering Rubber Stamps, for examle, 63% of all orders were for this item. If there was no relationship between Rubber Stamps and customer type, then one would expect the orders from each customer group to be composed of approximately 63% rubber stamps. Note, however, the significantly higher customer percentages for Banks (82%), Government (79%), and Wholesalers (71%); these three customer types appeared to have a greater need for rubber stamps than the average marking device customer. This same reasoning allows one to conclude that Nameplates & Engraved Signs were disproportionately demanded by Utilities, Marking Inks by Manufacturers, and Other items also by Utilities.

Now considering customer types, the following customer groups were observed to have these specific needs:

Paper Houses – badges, tags & coins

Manufacturers – metal marking tools & dies
              – special purpose marking inks
              – stencils and stencil equipment
              – other marking devices

Wholesalers   – embossing, notary & corporate seals

It may also be worth noting that while the previous analysis utilized number of orders as an indicator of demand, it would be just as reasonable to select, say, quantity per order or profitability per item as the dependent variable. Although their interpretations obviously differ somewhat, each variable provides a useful measure of the attractiveness to the firm of certain customer types towards specific product preferences.

WASTED RESOURCES

All of the information in this study--all of the results which were produced, all of the conclusions which were drawn, all of the suggestions which were made--was based on already-existing data. No one needed to be interviewed, no questionnaire needed to be designed, no survey needed to be taken--all data came directly from the invoices of the participating firms. To the extent that the results and conclusions are seen as worthwhile, to that extent the existing resources have until now been wasted by those firms. And this same information is undoubtedly available to all manufacturers of multiple products; and is undoubtedly being wasted by most of them in the same fashion. It sits in filing cabinets--or, perhaps, within computer storage devices--and, except for accounting purposes, gathers dust, whether physical or magnetic in nature.

Suggestion: Each firm, according to its particular needs, should develop its own Marketing Information System. Such an M.I.S. should be based entirely on information internal to and easily obtainable by the firm. The information must be worthwhile and continual. It should be worthwhile to the extent that it provides practical information, information that can be used to increase decision-making effectiveness. And it must be continual to the extent that the M.I.S. is a functioning operation of the firm, that it continually feeds information to the decision maker without the necessity of a direct request.

At stake is not merely the more efficient use of existing information, but also, in the not-so-long run, the profit survival of the firm.

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