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# A Survey of Working Capital Policy Among Small Manufacturing Firms

Richard Burns  
Joe Walker

This study reports results of a nationwide survey on overall working capital policy of small manufacturing firms. The survey instrument used was a modified version of the 1980 Smith and Sell study [18] on large firms. A detailed 36-question form queried firms on their overall working capital policies as well as on the management of the components of working capital. Statistically significant measures of association between working capital policies and tools were found among many of the variables. However, many other expected relationships were not confirmed.

## I. INTRODUCTION

Surveys indicate that a large portion of the financial manager's time is devoted to working capital management. This is not surprising in that current assets represent over 40% of the total assets of the typical manufacturing firm [12, p. 12]. Because of the magnitude and turnover rate of this investment, working capital policy and management are important to financial management.

Working capital management is of particular importance to the small business. With limited access to the long-term capital markets, these firms must rely more heavily on owner financing, trade credit and short-term bank loans to finance their needed investment in cash, accounts receivable and inventory. In addition, poor financial management is one of the major causes of failure among smaller firms [1, 16].

If this failure rate could be reduced, it would go a long way towards improving the innovative capacity of the economy. It would also help reduce the unemployment rate since new small businesses are one of the major sources of employment in the economy today (though there is controversy [22] as to the magnitude of this effect.)

For working capital decisions, surveys to date<sup>1</sup> on *small* businesses, like their counterparts on large businesses, have focused on the management of

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the *individual* assets (e.g., cash [3, 8, 10,], accounts receivable [7, 10], accounts payable [3, 8, 21] and inventory [9, 10, 13, 14]. But the only studies [18, 19] of *overall* working capital policy used samples based on *Fortune's* 1000 and 500 *largest* industrial firms. The important finding of those studies was a significant relationship between various success measures and the employment of formal working capital policies and procedures. However, no similar broad-based studies have been made of *overall* working capital management among *small* firms.

This study, therefore, is primarily an exploratory investigation of the extent to which various management tools and procedures are used in the *overall* management of working capital in small manufacturing businesses.

The questionnaire for the survey herein is based on the Smith and Sell study [18] referenced above,<sup>2</sup> but some of the questions were deleted or modified to better target the small business audience. In addition, other questions were added to look at areas of small business financial management that the authors felt were relevant. The survey was sent to small manufacturing firms across the United States. The response rate was 8.5%. Although a copy of the survey itself can be obtained upon request from the authors, it was omitted from this paper due to space limitations.

The organization of this paper first describes the survey instrument and research design in Section II, reviews the results in Section III, presents an overall summary in Section IV, and then suggests implications and directions for further research in Section V.

## II. SURVEY AND RESEARCH DESIGN

The survey instrument used was an imposing seven page questionnaire that included 36 questions within three major parts. Part I, "Company Information," was designed to establish the relative size and success of the firm. Part II, "Working Capital Policy," was concerned with overall working capital policy including type, decision-maker, frequency of review, relative importance, and tools and procedures for management of overall working capital. Part III, "Managing Working Capital Components," investigated specific tools and procedures for managing the individual components of working capital, *viz.*, cash, marketable securities, accounts receivable, inventory, accounts payable, and short-term borrowing.

Following Smith and Sell [18], some questions asked the respondent to write in a response whereas others asked for a selection among alternatives or a ranking of the alternatives. Therefore, in the RESULTS section which follows shortly, the reader is cautioned to watch for a change in the style of summarization. An "other" alternative was provided on many questions,

and respondents were encouraged to write in comments wherever they felt appropriate.

The surveys were sent out during the period from January 1990 to July 1990. Questionnaires with cover letters and return envelopes were mailed after phone contact to 2127 small manufacturing firms in the United States. Although manufacturing firms are only about 9% of the population of firms, this category was chosen because of the anticipated homogeneity of responses. The mailing list was obtained from Zeller & Letica, and it included all manufacturing firms with an employee range of 25 to 100. Although this size range was originally chosen as part of an earlier SBA research proposal, many of the firms on the mailing list had experienced significant growth in the number of employees. Therefore, it was decided to include all size firms up to 500 employees, the SBA size definition for most small manufacturing businesses [4]. Out of 186 responses, 184 were within the 500 employee limit. Although this sample is obviously biased toward the lower end of that range, it may not be a serious problem since firms with 100 employees or less comprise 97.9% of the SBA Small Business Data Base [11].

### **III. RESULTS**

The results in this section are covered under three headings:

- (1) Company Information,
- (2) Working Capital Policy, and
- (3) Managing Working Capital Components.

#### **Company Information Results**

The first five questions in the "company information" section were designed to collect summary statistics on the firm. Statistics on this are given in Table 1.

The average age of the small businesses in this survey is probably high when compared to that of small businesses in general. However, it is probably more typical of the manufacturing segment which has been losing ground to newer service-oriented firms in the last decade and also because the capital intensity of manufacturing industries discourages entry. In any case, this sample thus represents a group of more stable small businesses.

Following the Smith and Sell [18] methodology, for statistical inference purposes, the responding firms were broken down into three subgroups according to sales<sup>3</sup>: large (greater than \$6 million), medium (between \$4 and \$6 million), and small (under \$4 million). However, because of lack of access

**Table 1**  
**Summary Statistics on Firms Replying to Questionnaire**

<i>Variable</i>	<i>N</i>	<i>Mean</i>	<i>Median</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
Years in operation	184	37	30	28	4	148
Number of full-time employees	184	79	65	59	10	450
Average annual sales in \$ millions over past 3-5 years	184	7	5	8	1	80
Current level of total assets in \$ millions	176	4	3	6	0.2	60

to published estimates of ROI, the firms were simply asked to provide their own subjective estimates of profitability (high, average, or below average).

Again, following the lead of Smith and Sell [18] and more recently the work of Smith and Belt [19], chi-square tests were run on the various working capital categories with size, profitability, type of working capital policy (cautious or aggressive, written or informal), and firm age. There is no claim for causality anywhere in this study, merely the notice of correlation. Due to space limitations, *only* the significant (5% or better) tests were reported. In addition, on many of the tests, the cells were combined in order to prevent statistical "warnings" on "small" cells (frequency of 5 or less), but test results so warned were not reported since the results were suspect.

### Working Capital Policy Results

Although working capital constitutes over a third of total assets, less than a fourth of the manager's time is spent on it. This would seem to be a disproportionate result to the 60% figure in [5], but if the cost of devoting more time to working capital management is too high, it may indeed be a rational response. There are arguments [2, pp. 364-365], however, to indicate that the application of more sophisticated methods of financial analysis may not be worth the cost in small businesses.

As expected, a low 6.5% of the firms had a written working capital policy; 35.3% had *no* explicit working capital policy whatsoever. 37.8% of the firms had a cautious working capital policy, and only 11.6% had an aggressive working capital policy. The other 50.6% said it depended on the situation.

The president by far had the major share of the responsibility for working capital policy in 66.7% of the responses, followed by 11.5% for the vice-president of finance. The remainder was more or less evenly distributed among the other officers. Of course, this emphasis on the president is largely

due to the lack of specialization of management in small businesses. However, at the 0.018 level of significance, this responsibility was given to specialized officers in the larger firms. Furthermore, in the subset of *younger* (less than 30 years old) firms, this relationship held at the 0.006 level (but not in the older group).

40% of the firms reviewed working capital policy whenever necessary followed by 23.6% monthly and 16.4% on a quarterly basis. At the 0.014 level of significance, the more profitable firms tend to review monthly and quarterly.

The next six questions were designed to look at *overall* working capital tools and procedures.

A question was added to this part of the small business questionnaire to look at the effects of inflation. 54.9% of the firms said inflation had no effect on working capital levels, whereas 27.4% felt that it caused working capital levels to decrease. The 17.7% remainder felt that inflation tended to increase working capital levels. For the subset of younger firms, however, the larger of those said inflation either increased or had no effect on working capital levels at the 0.022 level of significance. Furthermore, at the 0.031 level of significance, the more cautious firms said inflation *decreased* working capital levels.

The next question used a *ranking* format following the format of other researchers [18].<sup>4</sup> The composite ranking (a weighted average of the rankings) was “highest” (1.38 on a 4-point scale) for using the current ratio to monitor working capital over time. The second most important tool for monitoring working capital was working capital turnover with a score of 1.77. Working capital as a percent of total assets was a distant third (2.23). At the 0.01 level of significance, the more profitable firms ranked “working capital turnover” lower than 1.

Considering possible changes in the management of certain working capital components, 54.6% of the respondents sometimes used ROI, 22.4% always used ROI, and 23.0% never used ROI. Use of ROI and profitability were significantly related at the 0.004 level, with those firms using it having greater profitability. In addition, the firms with written vs. informal working capital policies were significantly (also at the 0.004 level) more prone to *always* use an ROI criterion in this context.

As to whether firms considered the implications of working capital on the firm’s capital budgeting projects, 46.2% of the firms always did so, and 42.4% of the firms sometimes did so, which seems to indicate a high level of awareness of the impact of working capital as a use of funds. The relationship of this with size was significant at the 0.014 level. It showed that larger firms are more aware of working capital impacts on capital budgeting.

A question was added to this survey to look at computer usage in working capital areas of small businesses. The largest area in which computers were used was that of accounts receivable (15.7%) followed by accounts payable (14.7%) and inventory (12.5%). Cash budgeting was used in 8.7% of the responses. Only 22 respondents did not use the computer at all.

The accounting area was probably more heavily dependent on the computer because of the need for meeting the requirements of the tax laws and probably also because of the greater availability of computer programs in this area. Further, computers are at their best when performing routine high-volume tasks that require accuracy and speed. Thus the obvious application to working capital in managing volumes of customer and vendor accounts and inventory items.

The largest subgroups that appeared in the answers were those firms that answered "abcd" (cash budgeting, accounts receivable, inventory, and accounts payable, respectively), "bcd" (receivables, inventory, payables) and "bd" (receivables and payables). All other combinations were grouped into "other." In testing, then, the larger firms had more entries in these main categories than expected at the 0.000 level of significance. Further, firms with aggressive working capital policies were more represented in the "abcd" category at the 0.002 level of significance. And finally, for younger firms, they also made more use of "abcd" at the 0.005 level of significance.

### Managing Working Capital Components Results

#### *Cash*

The most prevalent interval of time for cash budgeting was weekly (40%), closely followed by monthly (28.3%) and then daily (20%). At the 0.026 level of significance, the firms with written working capital policies were more likely to budget on a *daily* basis.

The next eleven questions used the *ranking* format mentioned earlier; hence, the summary will be different from that of the previous exclusive choice formats.

With regard to the *use* of cash budgeting, "planning for surpluses and shortages of cash" was mentioned most often ( $n = 159$ ), and it was clearly the most important use of the cash budget with a composite score of 1.16 followed distantly by the other categories of response.

As for determining the target cash balance, the strongest response in terms of the composite ranking was "the need for transactions balances" ( $n = 150$  with a composite score of 1.19) followed distantly by the other categories of "compensating balances determined by banks" and "the level of interest rates."

Regarding the use of idle cash, the strongest response was that of the 90 respondents who ranked cash management accounts as their first choice with a composite score of 1.55. The next highest composite ranking was given to money market mutual funds (1.82) followed by certificates of deposit (1.95). 37 respondents did not invest idle cash at all. T-Bills were used roughly about a fourth as much as cash management accounts, and the composite score of 2.93 bears this out.

### *Accounts Receivable*

For credit granting techniques, the highest measure was the 191 responses with a composite ranking of 1.30 for the "C's of Credit" followed distantly by "sequential credit analysis" and "credit scoring."

For monitoring accounts receivable, the "aging schedule" and "collection period" were the two strongest response categories ( $n = 170$  with score of 1.45 and  $n = 145$  with score of 1.83). "Accounts receivable turnover" was a distant third with a 2.42.

In evaluating the credit terms and policy parameters, "marketing considerations" and "possible bad debt losses" had the largest number of responses (152, 154, respectively) but the former had the higher mean ranking (1.63 vs. 1.94). However, firms with aggressive working capital policies ranked "marketing considerations" more highly at the 0.052 level of significance but ranked "possible bad debt losses" lower at the 0.000 level of significance.

Finally, looking at the evaluation of credit policy changes, "firm sales" had the highest composite ranking of 1.99 ( $n = 135$ ) followed by the "level of accounts receivable" with a score of 2.16 ( $n = 140$ ). The "level of firm profits" and "return on investment" are close followers here too (scores of 2.36 and 2.68, respectively), indicating their use as backups in evaluating credit changes. At the 0.030 level of significance, firms with more aggressive working capital policies ranked "firm sales" with a 1.

### *Inventory*

With regard to the determination of storage (reorder) points, the categories of "computerized inventory control systems" and "ad hoc" decisions were high on their composite ranking scores with 1.61 ( $n = 100$ ) and 1.75 ( $n = 116$ ), respectively. The firms with aggressive working capital policies ranked "ad hoc decisions" lower at the 0.002 level of significance.

As for determining reorder quantities, the strongest response was clearly the "availability of parts and materials" with  $n = 152$  and a 1.64 composite score. This was followed distantly by a score of 2.09 ( $n = 148$ ) for "price

discounts on purchases.” Again, the other categories had substantial responses but only as secondary considerations for deciding on reorder quantities for inventory *purchased* by the firm.

Concerning the replenishment quantities for inventory *produced* by the firm, the parameter mentioned most often ( $n = 151$ ) was “production schedules” with a composite score of 1.42 followed distantly by “seasonality of demand” with a composite score of 2.09.

In evaluating proposed changes in inventory policy, the “level of inventory” itself with a composite score of 1.82 ( $n = 157$ ) and “inventory costs” with a composite score of 1.96 ( $n = 150$ ) were clearly the two strongest responses. The other categories followed distantly but fairly equally. The more profitable firms ranked “inventory costs” less than 1 at the 0.001 level of significance.

### *Accounts Payable*

82.0% of the responses reported accounts payable less than accounts receivable with 4.4% reporting them equal, *meaning* that small manufacturing firms were typically net suppliers of trade credit, an unexpected finding.

To see if small businesses understood the percentage opportunity cost of *not* taking discounts, they were asked to estimate the approximate annual cost of not taking discounts when trade credit was on terms of 2/10, net 30. The mean response of the 145 companies who answered this was to estimate that cost at 13.57% with a standard deviation of 14.86%. The median estimate was 10.0%. The minimum estimate was 0.0%, and the maximum estimate was 73%. Many of the respondents seemed to misunderstand the question entirely and to answer in dollar terms. Only 26 of the 145 answered anywhere close to the correct answer of 36.7%. At the 0.011 level of significance, the larger firms were more likely to answer “correctly” (between 30% and 40%). Further, this held for the younger firms at the 0.033 level of significance.

However, in looking at the cash discount policy, 42.9% *always* took the discount and paid on the discount date, and another 33.0% sometimes took the discount by paying on the discount date. Only 5.0% were able to “stretch” their payables and still get the discount. 18.7% never took the discount. So, in spite of small firm failure to accurately calculate the cost of not taking discounts, 75.9% of them always or sometimes took them! This is born out in the tests by the extraordinarily high (0.000) significance level for the relationship between discount policy and higher profitability. Further, for younger firms, the more profitable ones always took the discount at the 0.002 level of significance.

Again, however, there is no proof of causation here. For example, in another study [21], there is evidence that trade credit is taken for other reasons (such as establishing a good credit record) than the immediate monetary benefit.

### *Short-Term Funding*

Regarding the primary use of short-term loans, 33.9% of the respondents checked "regular and constant part of total firm financing" followed by the 27.9% who checked "nonspontaneous need as it arises." 24.0% said they did not borrow from commercial banks.

Concerning the kinds of short-term loans obtained from commercial banks, 44.1% were "lines of credit with compensating balances" followed by 37% who received "simple interest loans." "Discounted loans" and "loans with compensating balances" were almost negligible.

As to collateral requirements on commercial bank loans, 46.5% of the respondents said loans always required collateral, and another 22.9% said loans sometimes required collateral; but 30.6% said loans *never* require collateral. The relationship with profitability was significant at the 0.000 level and seemed to indicate that the more profitable firms obtained loans without collateral.

A *ranking* question was used to look at the terms which affected the cost of borrowing. "Fees" was clearly the most important element of that cost with a composite score of 1.59 ( $n = 87$ ). The other categories of discounts, compensating balances, and collateral requirements also received substantial responses, but their composite rankings were 2.28, 2.17, and 2.33, respectively, indicating a secondary importance.

And finally, using another *ranking* question to look at main sources of funding, "loans from commercial banks" predominated with a composite score of 1.61 ( $n = 129$ ) followed by "stretching accounts payable" with a composite score of 2.34 ( $n=102$ ) followed closely by "use of float" with a score of 2.31. The other categories of using accruals, selling receivables, depreciation, and tax deferrals were minor in comparison. Larger firms ranked float number 1 more often at the 0.035 level of significance, and firms with more aggressive working capital policies ranked loans from commercial banks number 1 at the 0.043 level of significance.

## IV. SUMMARY

In summary, the representative small manufacturer of under 500 employees in this survey would look like this: it would have been in business for about

37 years, have about 78 employees, average about \$7 million in sales per year, have about \$4 million in total assets, and would consider itself of "average profitability."

39% of the company's total assets would be working capital, but only 24% of the financial manager's time would be spent on working capital. Overall, the company would have an informal procedure or no written policy for working capital management. However, those that did have a written policy would probably be more profitable. What policy existed would be handled by the president and would be reviewed whenever necessary (though monthly or quarterly for the more profitable firms).

Inflation would primarily be seen as having no effect or possibly a decrease on working capital. The current ratio would be the main measure for monitoring working capital, and a ROI would be used sometimes or always to consider possible changes in working capital components. Use of ROI also correlated with profitability and the presence of a written working capital policy. Sometimes or always changes in working capital would be considered along with capital budgeting projects, especially for larger firms and those with written working capital policies. Computers would be used most of all for accounts receivable and accounts payable, although to a lesser extent for inventory control and cash budgeting.

For cash management, the typical company would use cash budgeting on a weekly basis mainly to plan for shortages and surpluses of cash, though aggressive firms and those with written working capital policies would plan using a daily format. It would determine its target cash balance based on its need for transactions balances, and it would put its idle cash in a cash management account or certificate of deposit.

For accounts receivable, the typical company would use the "C's of credit" to grant credit, but it would use both the collection period and aging schedule to monitor the payment behavior of credit customers. It would consider marketing effects and possible bad debt losses to evaluate its credit terms and policy, and it would look primarily at firm sales in evaluating proposed changes in credit terms.

With regard to inventory policy, the typical firm would use computerized inventory control systems to decide on the appropriate amount to replenish its storage (reorder) points by using ad hoc decisions, and it would mainly consider the availability of parts and materials in deciding on reorder quantities for inventory *purchased* by the company. However, in deciding on replenishment quantities for inventory *produced* by the firm, it would look mainly at the production schedule. The primary consideration in evaluating proposed changes in inventory policy would be the *level* of inventory.

As for accounts payable, the typical firm would be a net *supplier* of credit. It would seem to believe that the cost of foregoing trade discounts is only about 13%, yet it would always or sometimes (especially if profitable) take the discount.

With respect to short-term loans, the primary use for those funds would be regular and constant part of total firm financing, especially for aggressive firms, although nonspontaneous need plays a close role. About a fourth of firms simply *don't* borrow short term. For those who do, simple interest and lines of credit would be the two primary types of loans, and such loans would sometimes or always require collateral, although not for the more profitable firm or firm with a written working capital policy (again, no causal relationship demonstrated). Fees would be the primary factor affecting estimates of the cost of borrowing. The major sources of short-term funding would be loans from commercial banks and stretching accounts payable.

In testing for relationships of these practices with size or profitability, only the following chi-square tests *were* found statistically significant at the 5% level or better: larger firms gave their working capital policy responsibility to specialized officers, especially in younger firms; more profitable firms reviewed their working capital policies on monthly and quarterly bases; firms with written working capital policies reviewed on a monthly or quarterly basis versus irregular reviewing; firms with cautious working capital policies reported inflation as *decreasing* their working capital levels; the more profitable firms and also those with a written working capital policy used an ROI criterion in looking at changes in the management of certain working capital components. More profitable firms ranked working capital turnover lower (ranks 2, 3, 4, etc.) as a tool for monitoring. The larger firms and also those with a written working capital policy took into account the effect of working capital on capital budgets. Larger, aggressive, and younger firms tended to use the computer in the *combination* of uses in cash budgeting, accounts receivable and payable, and inventory. Aggressive firms and firms with written working capital policies used cash budgeting on a daily basis. Firms with aggressive working capital policies ranked marketing considerations higher when evaluating credit terms and tended to rank bad debt loss considerations lower. However, for analyzing credit term changes, firms with aggressive working capital policies ranked "sales as a consideration" higher. In regards to inventory, the firms with more aggressive working capital policies ranked "ad hoc decisions" higher for determining reorder points. Also, more profitable firms ranked "inventory costs" lower when evaluating changes in inventory policy. The profitable firms always or sometimes take the discount on payables, but the aggressive firms and those with written working capital policies were net users of trade credit. The larger and younger firms seemed to better understand the actual

cost of using trade credit. The more profitable firms and also those with written working capital policies obtain loans which don't require collateral. Firms with aggressive working capital policies used short-term loans for regular and cyclical uses as opposed to irregular need. Larger firms ranked the use of float higher, and firms with aggressive working capital policies ranked the use of commercial bank loans higher.

## V. FUTURE RESEARCH

Much of the data of this research tend to support what financial theory would describe as value-maximizing working capital policies, as shown above. However, it is puzzling why other sound practices don't show up as distinguishing successful from unsuccessful firms. Directions for further research would seem to lie in more detailed longitudinal studies of the life cycles of small firms in regard to their working capital policies. Many of the tests seemed to indicate similar policies for small and large firms, but not for the intermediate sizes.

In addition, there probably are interrelationships *among* the various working capital categories, and that possibility was also (purposefully) neglected in this study. Future studies may yet show "clustering" of policies amid the categories of size, profitability, policy formality or aggressiveness.

One interesting example in particular is how firms can be so ignorant of the cost of not taking discounts, and yet have the incentives to do so anyway.

The problems of surveys like this one are only too well-known, but in spite of such they represent an attempt to learn more about actual small business financial practices and their working capital practices in particular. Whatever its shortcomings, it adds more to the knowledge and database of this relatively unexplored area of finance, and provides the profession with new questions to direct further research.

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## NOTES

1. The authors are greatly indebted to Richard G.P. McMahon [15] for sending his study which greatly assisted in the literature search.
2. Permission was obtained from Smith and Sell to duplicate and/or modify their survey for the authors' use.

3. The breakdown according to size could have been done with number of employees or total assets. However, these were all highly and significantly correlated. The chi-square tests were run with these other measures but differed very little in results. The decision to use sales was therefore made on the basis of precedent set by [18, 19].
4. The composite average is merely a weighted average of the rankings (weighted by the percent of respondents). Smith and Sell [18] declined to statistically analyze this figure since it implied cardinal measurability which was inappropriate for the kinds of questions asked in this study. Since this study is highly similar to theirs, the authors herein follow suit. Chi-square tests were run, however, on the *frequencies* of the rankings with other variables.

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