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THE EMERGENCE OF WORKING CAPITAL MANAGEMENT

Until recently, working capital management was treated as an isolated activity of lessor importance than long-run financial planning. There are a variety of reasons for this lack of interest. One reason is that long-run financial theory is reasonably well-defined and implicitly assumes working capital inflows and outflows are imbedded in the firm's long-run cash flows. Second, although financial theory assumes the distribution of long-run cash flows are relatively stable, it is widely recognized that short-run cash flows are often unstable. This instability of near term cash flows makes modeling of the working capital process very difficult. Third, many working capital decisions are tactical, repetitive and reversible and thus are considered as less important than strategic investment and financing decisions. In essence, by assuming a long-run time horizon with a stable cash flow distribution, financial theory avoids the difficult problems involved in managing liquidity, credit, inventories, purchases, production and short-term borrowing.

Although academics are generally more attracted to long-run financial planning, the contrary is true for corporate executives where managing working capital flows is a daily operational activity. There is agreement in the literature that the objective of financial management is the long-run maximization of owner's wealth, but there is little agreement as to the objective(s) of working capital management. Generally, the literature assumes working capital activities are financial in nature and it does not include marketing, production, purchasing and other operational activities. A study of the objectives of working capital management and activities as perceived by corporate managers should prove quite insightful.

The objectives of this article are to review briefly the development of

working capital thought; to analyze the multiple objectives of working capital management, to measure the importance of working capital activities; and to suggest a series of future research topics related to working capital management.

BACKGROUND

Recent inflationary conditions have highlighted the importance of short-term asset, liability and operational management and the lack of understanding we have of the relationships between working capital and profitability. These conditions sparked corporate and academic interests to study the processes of managing working capital. Until the early 1960's working capital was discussed in a static setting with financial ratios, cash budgets and sources and uses statements being the primary tools of analysis. With the advancement of technology, namely in skills related to the computer and management science, tools for dynamic analysis became available and modest interest in working capital problem solving emerged. The result has been a wide variety of models focused on specific decision-making activities. A brief overview of these developments are discussed in the following paragraphs.

In 1952 Baumol [2] introduced the idea that inventory control models should be used for managing cash because the two processes were quite similar under conditions of certainty. This notion lay dormant until the mid 1960's when Miller and Orr [22] postulated cash flows were random and designed a control limit inventory model for managing cash. Shortly thereafter, Archer [1], Lerner [15] and Orgler [23] introduced models for determining the appropriate level of cash in a more complex environment. During the 1970's Stone [33] and Homonoff and Mullins [11] refined the cash management process. Several authors, Donaldson [7], Stone [32, 34] and Pogue, Faucett and Bussard [24] broadened cash management to

include the extension of credit lines. Thus, during the past decade financial thought expanded cash management from a narrow definition to a comprehensive measure of a company's total liquidity position, i.e., its highly liquid assets and liabilities.

In 1965, Benishay [3] offered a deterministic model which used financial ratios for controlling the levels of accounts receivable. Mehta [18] presented a model for evaluating and selecting customers desiring credit. In the 1970's several authors developed models for controlling accounts receivable [16] [17] and for screening credit risks [5] [6]. Inventory management has been treated more as a production problem, but Beranek [4] was a leader in introducing inventory management into the finance literature. The linking of receivable and inventory management and showing the impact of these joint activities in profitability has been presented by several authors [9, 20, 27, 28, 29].

A classic article by Robichek, Teichroew and Jones [25] presents the linear programming model of the short-run financing alternatives. This model develops the key relationships among the short-term sources of financing and shows the costs involved with various financing combinations.

In the early 1960's Walker [37] indicated several theoretical relationships involved in working capital management and Van Horne [35] formally modeled a few of these relationships. These two authors focused on current assets and liabilities as the main thrust of working capital management. Knight [13] advocated working capital management should include operational costs reported in the income statement in addition to the current items on the balance sheet. This involves a funds flow analysis that is strongly supported by Helfert [10] and Hunt [12]. Funds flow analysis appears to be in the main stream of financial thought as a comprehensive measure of working capital management.

Recent literature has recognized the impact of working capital management on the profitability of the firm. In 1968, Vickers [36] emphasized the need

to extend traditional investment analysis to include not only investment and financing variables, but to encompass the production or enterprise operating structure of the firm. In 1971, Donaldson [7] developed a concept of planning for financial mobility. He stressed the need for integrating short-term operational planning with long-term financial decision making. Smith [30] noted the significance of the size of the working capital components when compared to fixed assets and liabilities and later he developed a model for measuring the tradeoff between liquidity and profitability [10]. Merville and Tavis [31] used optimization and Gentry [8] employed simulation to link the working capital process to the capital investment process. These two models introduced credit, inventory and liquidity decisions, plus changes in operational cost in determining the value of investment projects.

The concept of a multiple goal oriented financial planning process was introduced by Krouse [14]. He assumed management has a hierarchy of multiple goals and could assign weights to various profitability, liquidity, and operational cost control objectives. This model requires that the goals be satisfied in the sequential order specified by management. Also, Mehta [18] and Sartoris and Spruill [26] offer a goal programming model for working capital management that allows tradeoffs between various specified goals. The trend of explicitly integrating short-run investment and financing decisions into the long-run investment and financing process is widely accepted in the literature and appears to be in the main stream of financial thought.

METHODOLOGY

During the spring and summer of 1974 several executives were interviewed concerning the working capital decision-making process in their firm. These interviews plus the financial literature provided the background for designing a questionnaire to study management's perception of the working capital process.

The staff at the Survey Research Laboratory at the University of Illinois assisted in the design of the questionnaire. The questionnaire was pretested and the executives involved in the pretest were interviewed concerning the testing instrument being used.

It is recognized that the management of working capital varies substantially among industrial, utility, transportation, and service industries. Resource limitations made it impossible to study each of these industry groups, therefore, it was decided to use the 1974 Fortune 500 industrial companies as the universe of the United States companies.

Because working capital decision-making is present in all areas of a corporation, it was essential to acquire responses from top management in the areas of production, marketing and finance. Thus, four questionnaires were sent the Treasurer of each company. The Treasurer was asked to complete one questionnaire and to have the comptroller and an executive from production and marketing to complete a questionnaire. A postpaid envelope was enclosed to return the questionnaires.

There were three mailings sent to the Fortune 500 companies between the period December 1974 and March 1975. The final questionnaire was returned in May 1975. We received 460 responses from 217 companies in the United States, an average of 2.12 responses per company. The companies compose 43.4 percent of the Fortune 500 companies and 48 percent of the total 1974 sales of the 500 companies. Additionally 15 percent of the companies declined to participate and the remainder of the companies did not respond. The data were processed by the Survey Research Laboratory

WORKING CAPITAL OBJECTIVES

There is not a consensus among academics or managers concerning the objectives of working capital management. In interviewing managers from

several corporations, it was apparent their perception of the objectives and the functions of working capital management varied widely. For example, a few managers perceived working capital management occurring in a static determinstic state. This view is also held by some academics. In general, those advocating this perspective envision working capital management as a series of separate activities, e.g., the management of cash, receivables, short-term financing, or inventories.

At the other extreme, a few authors and managers view working capital decision-making as a dynamic process occurring in an uncertain environment. These models assume short-run investment and financing objectives are the same as long-run financial planning objectives, i.e., maximizing the long-run value of the common stock. This approach integrates the various working capital activities into the strategic financial planning process of the firm.

What do corporate managers perceive as the objectives of working capital management? Corporate managers from large industrial companies were asked to respond to the following question:

> The following is a list of working capital management objectives. For your company, which of these objectives would you consider the. . .
>
> a. most important
> b. second most important
> c. least important

The four objectives are reported on Table 1. Also presented in Table 1 are the distributions of the manager's responses to the most important, second most important, and least important working capital objectives. There are several significant observations emerging from Table 1.

Of the 442 respondents, 56 percent indicated the most important working capital objective was to provide the cash, accounts receivable, inventories and short-term credit necessary to support the anticipated sales in a defined

TABLE 1

RESPONDENTS RATINGS OF THE MOST IMPORTANT, SECOND MOST IMPORTANT AND LEAST IMPORTANT WORKING CAPITAL OBJECTIVES

Objectives	PERCENT OF TOTAL RESPONSES			
	Most Important	Second Most Important	At Least Second Most Important	Least Importan
	1	2	(3)=(1)+(2)	4
Number of Responses	442	438		435
(1) To provide the cash, accounts receivable, inventories and short term credit necessary to support the anticipated sales in a defined planning period.....	56.3	20.8	77.1	5.9
(2) To provide a financial buffer in order to minimize the effect of surprises in sales of materials, production, labor, credit, and transportation.....	6.6	26.5	33.1	43.2
(3) To minimize the balances in cash, receivables, inventories and short term debt.....	21.7	27.1	48.8	24.8
(4) To evaluate changes in each current asset as an investment decision and to minimize the cost of short term credit.....	15.4	25.6	41.0	25.5
Not useable	1.6	1.6		1.6
TOTAL	100.0	100.0		100.0

planning period. Another 20 percent selected this objective as the second most important, or, alternatively, 77 percent of the managers found this objective to be at least second most important. These data indicate the most important working capital objective for large industrial companies is to support sales.

The data in Table 1 show 21 percent of the managers rated minimizing the balances in cash, receivables, inventories and short-term debt as the most important objective. This minimization concept is used as the objective function in many working capital models [30, pp. 15-16]. Additionally, this minimization objective was selected as second most important by almost 27 percent of the managers. These two observations give reasonably strong support to the idea that minimization is the second most important working capital objective.

Objective 4 assumes the company is seeking an optimal allocation of its working capital resources and it seeks to determine if working capital decisions are viewed as investment decisions. Only 15 percent of the managers rated this objective as the most important, but 41 percent rated it at least second most important.

Do managers perceive providing a financial buffer to minimize the effect that unexpected events have on sales as an important working capital objective? Only 6 percent of the respondents rated this objective as the most important, while almost 43 percent selected it as the least important of the four alternative objectives. Thus, providing a financial buffer is perceived as the least important working capital objective by corporate managers.

RANKING OF CHOICES

If a manager choses supporting sales as the most important working capital objective, what objective did he or she select as the second most important and least important?

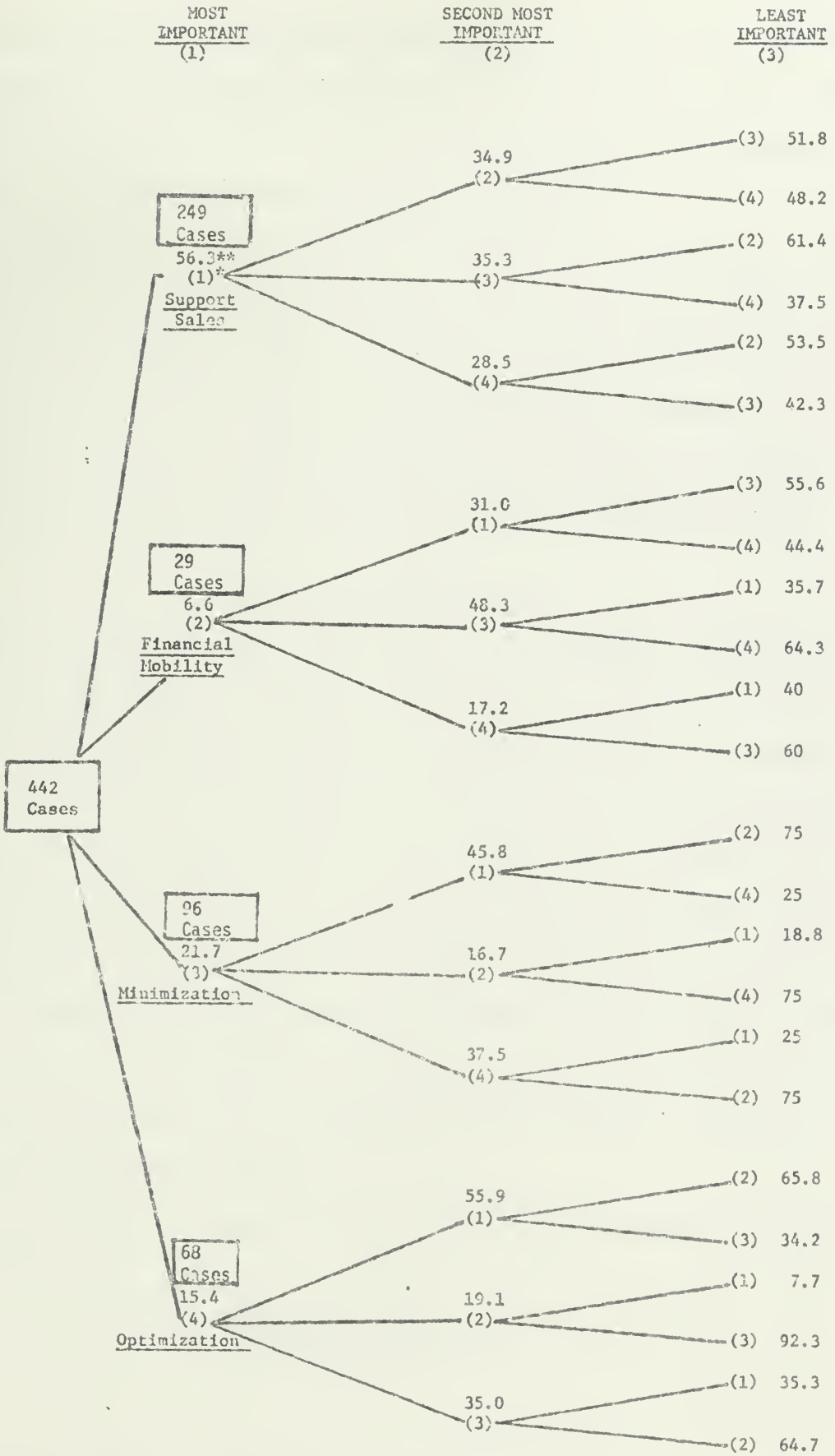
The sequence of choices made by the respondents for each of the working capital objectives is summarized in a decision tree framework in Table 2. A brief example will show how to interpret Table 2. Looking under column 1 of the upper branch one finds 249 respondents, 56.3 percent, selected objective 1 as the most important. The frequency of an objective was selected as second in importance by these 249 managers and is portrayed in column 2. One finds that 34.9 percent selected objective 2, providing financial mobility; 35.3 percent chose minimizing current assets and debt, objective 3, and 28.5 percent selected objective 4. Column 3 shows the distribution of the least important objectives coming from each of the second most important objectives.

A few observations from Table 2 stand out as significant. First, the largest percent of the respondents that preferred minimization, objective 3, or optimization, objective 4, as the most important, selected the objective of supporting sales, objective 2, as the next most important. However, of the 29 respondents selecting objective 2, financial mobility, as the most important, 48 percent chose minimization, objective 3, as the second most important objective, and only 31 percent preferred objective 1 as their second choice. It is apparent there is a substantial difference among the managers concerning their perceptions of the importance of working capital management objectives.

The managers preferring the objective of supporting sales as most important had mixed views concerning the next most important objective. Almost equal numbers selected minimization, and financial mobility, 35.3 percent and 34.9 percent respectively, and 28.5 percent chose the optimization objective.

TABLE 2

SEQUENTIAL RANKING OF WORKING CAPITAL OBJECTIVES
EMANATING FROM MOST IMPORTANT



* ( ) Represent the working capital objective defined in Table 1.

** Values reported as percent of total. The sum of a group does not always equal 100 percent because the respondents did not answer all questions.

Although the respondents preferring objectives 3 and 4 as the most important ranked objective 1 as second in importance, the reverse did not hold. These data indicate there is a wide divergence in the perception of management concerning the objectives of working capital management.

The frequency of the least important objectives are presented in column 3 of Table 2. One significant observation is that objective 2, financial mobility, was the unanimous choice as the least important objective by all three groups. Also, alternative 1 was never selected by a majority of the respondents as the least important working capital objective. The pattern of the results on objectives 3 and 4 as the least important were mixed.

WORKING CAPITAL ACTIVITIES

Working capital management cuts across all operational activities of a company including finance, marketing, production and purchasing. The financial management textbooks assume all working capital activities are important. However, a brief review of the research literature on working capital management indicates the management of cash has received more attention than any other working capital activity. Also, the accounting and finance literature devote substantial coverage to cash budgeting. Credit extension models have attracted modest interest in the finance literature, while inventory control is found in the area of operations management. What working capital activities are considered important by the managers of large industrial companies? They were asked the following question:

> Which of the following working capital activities would you rate as as . . .
>
> a. most important?
> b. second most important?
> v. least important?

The working capital activities rated by the respondents are presented in Table 3. The distribution of their rankings for the most important, second most important and least important are also found in Table 3. There are several insightful observations emerging from Table 3.

The working capital activity selected as most important was planning the cash budget. Table 3 shows 36 percent of the managers rated planning the cash budget as the most important working capital activity. Also 50 percent of the respondents rated it at least second most important.

Three widely divergent activities were found to be relatively close in their ranking by the respondents. Table 3 shows approximately 18 percent of the respondents rated designing sales strategies and product promotion as the most important activity. Slightly over 14 percent identified receiving cash inflow, paying short-term debts and investing cash balances as the most important working capital activity. Finally, Table 3 indicates almost 14 percent of the respondents rated planning and scheduling production activities as most important. Combining the frequencies of the most and second most important activities, there is a slight change in the ranking of these three activities, but the rankings are all relatively close.

There were two working capital activities that were rated as least important. Paradoxically 21.7 percent of the respondents rated designing sales strategies and product promotion as least important. The polar ratings of this activity indicate there is a wide difference in the perception of the respondents concerning the importance of marketing in the management of working capital. Approximately 21 percent of the managers rated arranging short-term borrowing at banks or with trade creditors as the least important activity. This is a very interesting finding because

TABLE 3

RESPONDENTS RATINGS OF THE MOST IMPORTANT, SECOND MOST IMPORTANT AND LEAST IMPORTANT WORKING CAPITAL ACTIVITIES

Working Capital Activities	PERCENT OF TOTAL RESPONSES			
	Most Important	Second Most Important	At Least Second Most Important	Least Important
	1	2	(3)=(1)+(2)	4
Number of Responses	452	450		448
a. Planning the cash budget.....	35.8	14.4	50.2	3.1
b. Designing sales strategies and product promotion.....	18.1	15.3	33.4	21.7
c. Receiving cash inflow; paying short term debts; investing cash balances.....	14.4	16.0	30.4	10.9
d. Arranging for short term borrowing at banks or with trade creditors.....	4.4	11.3	15.7	21.4
e. Planning and scheduling production activities.....	13.9	18.9	32.8	15.6
f. Purchasing of materials and goods.....	7.3	12.7	20.0	10.0
g. Credit extension and collection.....	4.4	9.8	14.2	15.6
Not useable	1.5	1.5		1.5
TOTAL	100.0	100.0		100.0

during the period this study was conducted, inflation and short-term borrowing were at a peak, but collectively the managers perceived arranging short-term borrowing as relatively less important than other activities. This observation might suggest short-term borrowing is not a problem for large industrial companies.

Purchasing of materials and goods and credit extension and collection fell in between the leading and least important activities. Although purchasing and credit extension and collection are vital activities in a company, they were not perceived as major actors in the management of working capital.

In summary, the most important working capital activity is planning the cash budget. The data show the working capital process extends substantially beyond cash management and encompasses the production and marketing planning. Purchasing, credit extension and collection and short-term borrowing are generally perceived as being less important than the other activities. Their importance was found to be rather mixed.

Finally, it is important to note that an analysis of variance test found there was no significant difference among the responses of the four types of respondents for any of the questions reported in this paper. This was a most interesting discovery because it emphasizes the general uniformity in perception among the four types of respondents.

FUTURE RESEARCH

Studying managements perceptions of the working capital process provides a substantive basis for making suggestions for future research. The study revealed that managements perceive the primary objective of working capital management is to support sales. Furthermore, the study emphasizes the key role of the cash budget in working capital management. Both of these observations implicitly

indicate that the management of working capital is closely related to the trend of future sales. Or alternatively, that working capital variables and policy decisions are dependent on anticipated sales. Thus, future modeling of either component parts of the working capital system or the total system should focus directly on the interrelationships that exist in the cash budget and be closely tied to future sales forecasts.

To measure the impact of working capital components on the profitability and risk of a company, it is necessary to develop a total planning model. This model should encompass several variables, the dimensions of uncertainty and allow for dynamic changes over time. The objectives of this model would be to generate cash budgets and integrate them into pro forma balance sheets, income statements, and flow of fund analysis statements. By linking the cash budget to other financial statements one can analyze the sensitivity of total cash inflows and outflows to changes in working capital policies.

The origin of the concept of liquidity is so old it is lost in the ages of antiquity. However, the correct measure of liquidity is a major concern of corporate managers, financial institutions and the academic community. Several questions related to liquidity are on the forefront of potential research projects. How much liquidity is considered to be enough? Is the relationship between liquidity and profitability negative, positive or some optimal level? What is the relationship between liquidity and an appropriate risk measure?

One could attack these problems by assuming a corporate liquidity measure is closely related to a comprehensive liquidity index for all manufacturing corporations. As in the case of the market index in Sharpe's portfolio selection model, a comprehensive liquidity index would serve as the basis for comparative analysis. There are several liquidity indices that could be used to test the significance of these relationships. Also, there are a variety

of dimensions that need to be controlled in testing these relationships, e.g., asset size, stability of cash flows, level of profitability, industry or risk class and time period.

Measuring the impact of working capital management on profitability is a fundamental research problem. Discovering new or improved performance measures of working capital management would expand our understanding of the linkages between short-run and long-run financial planning processes. Improving the sales forecast to have higher validity and consistency would be a major research contribution. Because these problems are complex, much of the research should be done at the firm level and not rely on the use of aggregate data. Perhaps case studies or personal focused interviews have the potential for finding the missing links.

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