IMPLEMENTATION OF BALMOU, MILLER AND ORR MODELS AS AN INNOVATION TOOL AND COMPETITIVE STRATEGIES FOR MICRO AND SMALL COMPANIES.

Robson Antonio Tavares Costa[1]

Ana Caroline Barreto de La Rocque [2]

Letícia Uane Avis de Oliveira[3]

Marjory Andressa Ferreira Domingos[4]

SUMMARY

This article was proposed with the objective of bringing to the academic community themes from the financial area of great relevance to organizational management, content that is not used in practice and in most cases the non-use comes from the lack of knowledge of professionals, it was further studied in this article the relevance of using this knowledge to support micro and small companies. We also seek to present some concepts directly related to the classification of Micro and Small Enterprises, Working Capital, the Management of Available, Minimum Cash, Baumol Model, Miller and Orr Model, showing how these models can be used as innovation tools and competitive advantage in companies.

KEY WORDS: available management, micro and small companies, working capital, competitive strategy.

INTRODUCTION

Innovation plays a big role in the organizational scenario, as it helps in differentiating and highlighting a company in the market. The manager can innovate in his products and services, in his marketing and advertising strategy, and also in the management of his financial capital, generating a huge competitive advantage, which will contribute strongly to the growth and success of the company. It is seen that today a considerable portion of micro and small companies still do not have a good management of their finances, let alone use some model of management of this capital, which often creates problems in the

---

[1] Professor at the Federal University of Amapá, Chair of Finance. Doctor in Business Management from the University Brings the Montes Alto and Douro of Vila Real-Portugal, Master in Business Economics from the University Cândido Mendes of Rio de Janeiro, Specialist in Accounting Management, Auditing and Controllership from the International Faculty of Curitiba and Graduated in Management Sciences from the University Center of Pará.

[2] Administration Student at Federal University of Amapá

[3] Administration Student at Federal University of Amapá

[4] Administration Student at Federal University of Amapá

Implementation of Balmou, Miller and ORR Models as a Tool for Innovation and Competitive Strategies for Micro and Small Enterprises.

accounting organization and in obtaining profits, leading them to bankruptcy even in its first years of operation. The models that will be presented on the administration of the available,

MICRO AND SMALL COMPANIES

From Complementary Lawnº 123, of December 14, 2006, are considered as micro companies, all those that obtain an annual gross revenue, equal to or less than R $ 360,000.00. Small companies, on the other hand, are those that acquire annual gross revenue above R $ 360,000.00 and equal to or less than R $ 3.6000.000,00. Gross revenue is considered to be:

> [...] the proceeds from the sale of goods and services in own account operations, the price of services provided and the result from operations in an external account, not including canceled sales and unconditional discounts granted (ALMEIDA 2012, p.50).

These companies are characterized by having simpler structures, in which the organization is exercised by the owners themselves or by a small group of people, who generally have direct contact with customers. Other aspects also identify these companies, such as the relationship between social capital and personal assets of those involved.

The concern with the management of micro and small companies is great, since they are considered of great importance in the maturation and growth of a positive and favorable economy. The impact that these micro and small companies generate is reflected in the generation of opportunities provided to the economically active population available in the labor market.

As its operating market enters several sectors and has achieved success in many of them, especially when it operates in small markets, without much visibility, it ends up meeting a vast demand, however there are countless adversities encountered, such as financial, economic, administrative difficulties , marketing, behavioral or technical, and due to the difficulty of managing them, many are unable to overcome and end up closing involuntarily, bringing negative consequences for the country's economy.

Bearing in mind that micro and small companies are one of the main pillars of support for the Brazilian economy, its poor management can cause serious problems of survival or even lead to bankruptcy. Administrators need to have accurate information if they are to make good decisions. According to Silva (2002, p.23), a company without accounting is an entity

Implementation of Balmou, Miller and ORR Models as a Tool for Innovation and Competitive Strategies for Micro and Small Enterprises.

without memory, without identity and without the minimum conditions to survive or to plan its growth.

AVAILABLE ADMINISTRATION

An alternative would be the use of working capital management in these companies, since it seeks to balance their profitability and liquidity. Having a significant participation in the operational functioning of companies, normally covering more than half of their total assets, inadequate management causes serious financial problems, effectively leading micro and small companies to bankruptcy.

Good cash management in a micro or small business brings profitability when using cash and marketable securities with discretion, reducing the collection period. Cash and marketable securities are the most liquid assets of a company, and are always available.

The three reasons for maintaining cash and quasi-cash balance (marketable securities) are: the transaction reason; the precautionary reason and the speculation reason.

A cash balance is maintained to satisfy transactional needs, while investments in marketable securities provide a precautionary security stock in the form of liquid resources and, possibly, the chance to profit from unexpected transactions such as speculation. Estimating the cost-benefit ratios of transactional balances is not an easy task, but the Baumol and Miller-Orr models can help administrators in this regard. The Baumol model assumes that the company's future cash demand (cash outflows and inflows) is known with certainty through the expected cash value "VEC", while the Miller-Orr model incorporates more realistic assumptions to the uncertainty of flows cash flow, through the return point that depends on the conversion costs; the daily opportunity cost of resources and the variation in daily net cash flows. Fonseca (2009) tells us that one of the great advances in the study of finance was the creation of the models of administration of the available, which seek to subsidize the manager in the administration of the companies' cashiers. According to the author, these models, in addition to establishing a cash analysis, also take into account the return and risk of assets.

Efficient cash management is affected by the company's operating and cash cycle. Ideally, managers want to minimize these cycles without jeopardizing profitability. Rotating

Implementation of Balmou, Miller and ORR Models as a Tool for Innovation and Competitive Strategies for Micro and Small Enterprises.

inventories as fast as possible, collecting the receivables in the shortest possible time and paying the receivables and other bills as late as possible without jeopardizing the company's credibility, are three basic strategies for achieving this goal.

The simultaneous use of these three strategies should reduce the company's cash cycle, as well as the financing needs, leading to increased profitability. Cash balances and cash inventories are significantly influenced by production and sales techniques. Turning inventories as fast as possible, collecting receivables as early as possible and delaying payment of receivables without harming the company's credit and taking advantage of any financial discounts offered, are some basic strategies to be adopted in managing the cash cycle. These rules must be obeyed using more strategies.

In the world these funds are called float, this term refers to funds already collected from the debtor, companies or individuals, but which are not yet available to the creditor. Mail remittance float, processing float and check clearing float are basic components of both the collection float and the payment float.

The company's main objective with respect to the float is to minimize the receipt period and maximize the disbursement period, within reasonable limits. The most common techniques for speeding up collections are: bank concentration (faster check clearing time), post office system (which electronically makes credit available to the customer), direct mail (allows immediate check withdrawal), postdated checks , credit orders, transfers via telex, automatic debits to account.

Techniques for delaying payments include controlled disbursement, when the company is informed about difficulties in accessing the payment site, and can thus delay the withdrawal from the account; manipulation of float and overdraft systems, zero balance accounts and direct account credits.

Establishing and maintaining close relationships with banks is crucial for effective cash management that is more complex externally than internally. Marketable securities are short-term, highly liquid, interest-bearing government and private financial instruments that also allow companies to make gains on temporarily idle funds. For a security to be considered negotiable, it must have a liquid market, with characteristics of breadth and depth. In addition,

Implementation of Balmou, Miller and ORR Models as a Tool for Innovation and Competitive Strategies for Micro and Small Enterprises.

the risk related to the guarantee of the principal must be very low. These bonds provide relatively low yields due to their reduced risk and the fact that interest on the issuance of the Treasury and most issues of federal entities are exempt from state and municipal taxes.

Other companies or banks also issue securities, such as bank deposit certificates, commercial papers, bank acceptances, eurodollar deposits, mutual fund quotas and a repurchase agreement. These bonds have slightly higher yields than those issued by the government with similar maturities, due to the greater risks associated with them and the fact that they are taxed at all levels of government, federal, state and municipal. Therefore, managing what is available requires professional tact.

2. AVAILABLE CASH ADMINISTRATION MODELS

2.1. OPERATIONAL MINIMUM CASH MODEL

The minimum operating cash model was one of the first models that intended to present techniques for determining the amount in cash. The model is based on the basic assumption that the company must, in order to settle its obligations at maturity and take advantage of investment opportunities, maintain a minimum cash balance.

The minimum operating cash can be considered as the net amount of resources necessary for Net Working Capital to support a determined level of sales. Firstly, it is necessary for the company to be able to determine or project an amount of cash disbursements for the period, after this determination it should see the amount found by the cash turnover.

For example, assuming that the company estimates cash disbursements for the year in the amount of $ 2,000,000.00 and presents a cash turnover of 10 times, the minimum amount of cash to be maintained will be:

Minimum Operating Cash = 2,000,000.00 / 10 = 200,000.00

Some criticisms can be raised regarding the adoption of the minimum operating cash model:

Implementation of Balmou, Miller and ORR Models as a Tool for Innovation and Competitive Strategies for Micro and Small Enterprises.

- The fact that the model does not consider the opportunity cost in relation to maintaining an idle cash balance;
- Most of the time there is no synchronization between cash inflows and outflows;
- The assumption that cash inflows will be equal to disbursements, regardless of the hypothesis of profit or loss;
- The assumption that purchases, production and sales take place at a constant rate.

As the model admits simplifications and ignores the points above, any change in the operating cycle can change the need for resources in the minimum operating cash. Another factor that can invalidate the calculations provided by the minimum operating cash model is the non-consideration of the "precaution" and "speculation" reasons, since this only works with the hypothesis of disbursements necessary to satisfy operating activities.

There are still some factors that can influence the minimum cash. Assaf Neto (2002) highlights some of them: lack of synchronization between payments and receipts, possibility of unforeseen events, existence of a developed financial market, good relationship with the financial system, existence of several bank accounts, inflation rate and others.

3. BAUMOL MODEL

William S. Baumol developed a model for cash management from the analysis of the formulation of the economic purchase lot used in inventory management. By incorporating the opportunity cost and transaction costs of investment and redemption transactions in financial assets, the establishment of the appropriate cash balance would be easily determined.

The Baumol model is only fully applicable when the company presents periodic cash inflows and constant outflows of funds, even so, the model has made major contributions to short-term financial management.

The cost of maintaining cash balances, according to the model, will be represented by the opportunity cost of maintaining cash values instead of investing them in assets with the same level of risk and liquidity, the transaction costs will be determined when the transfer between cash and financial asset.

Implementation of Balmou, Miller and ORR Models as a Tool for Innovation and Competitive Strategies for Micro and Small Enterprises.

The existence of short-term financial assets allows the company to transform a regular flow with a single cash inflow into several small inflows

Figure 1 - Baumol model
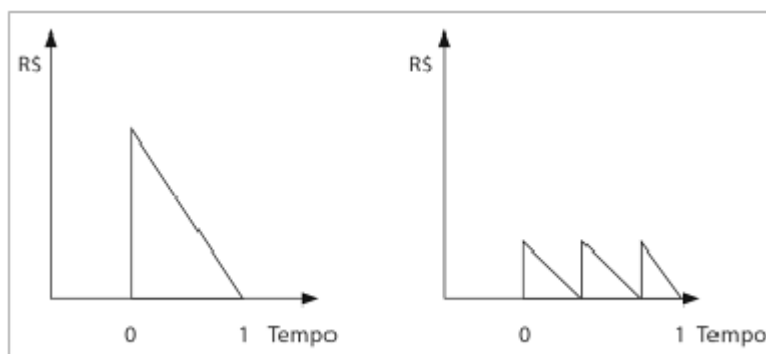
ROBSON TAVARES, AC (2013) apud BAUMOL (1952)

As we can see in the graphs above, by applying the cash balance to short-term investments, the company transforms a regular flow, represented by a single cash inflow, into three regular flows of lesser value, available whenever the company needs resources against their obligations.

In the option for a short-term financial investment, the company obtains a gain in the form of interest, but the option of investing and divesting resources will also entail administrative, tax and banking costs necessarily present in these operations, factors that will impact upon the determination of the cash balance.

According to Baumol, considering these assumptions, the number of transfers between cash and financial assets would be determined as follows:

$$N = \sqrt{\frac{0,5\,i\,R}{b}}$$

Where "N" will be equal to the number of transfers between cash and the financial asset, "i" will be the interest rate paid, "R" will be the full amount of the regular flow and "b" the cost incurred in the application operations and haggling of the financial asset:

Implementation of Balmou, Miller and ORR Models as a Tool for Innovation and Competitive Strategies for Micro and Small Enterprises.

For example, a company that provides services, and usually concentrates its receipts at the beginning of the month, with a cash inflow of $ 450.00.00, considering a month with 20 working days, will present average disbursements of $ 22,500. and / or the remuneration for short-term financial investments is 1.0% ªm. Knowing that each investment or redemption operation of the financial asset is $ 90.00, we have:

$$N = \sqrt{\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}}$$

Therefore, (5) five cash inflow transactions will be made through the transfer of funds from the financial asset.

This model can be applied to companies, such as consultancy, that have customers that concentrate the payment on a certain day of the month, and the company has to make disbursements throughout the month.

Assuming the possibility of a short-term investment, the company can transform a regular flow of cash receipts into several flows, as long as it applies part of the initial receipt, and over time, redeem the money to honor its commitments.

This model assumes that the portion of money invested in the short term provides a gain in the form of interest, and that each investing / divesting operation implies a cost (from taxes on financial transactions to the cost of the time it takes for the employee to make the operation to call the bank and request the transfer of funds from the investment account). The Baumol model compares the returns obtained from short-term investments and the cost of each investment and redemption operation, determining how many equal amounts the original receipt will be divided, in order to maximize profit.

4. MILLER AND ORR MODEL

According to the author Tófoli (2008), he states that this model of cash management works with unexpected cash behaviors, being more used in situations where cash flows are random.

Implementation of Balmou, Miller and ORR Models as a Tool for Innovation and Competitive Strategies for Micro and Small Enterprises.

Assaf Neto (2002), says that this model seeks to determine a minimum balance and a maximum cash balance. As with the Baumol model, this model is used based on the existence of two assets: cash and an investment.

According to the author, when the cash balance is below the lower limit, it is necessary to make a redemption (transfer of investment amounts to cash) to restore the company's liquidity, and when the cash balance is above the maximum limit, it does then, an investment of part of the resources becomes necessary, avoiding an excess of liquidity.

In addition, there are some hypotheses that support the Miller-Orr model:

- There are two assets (cash and marketable securities);
- There is no waiting time between transfers of values for the two assets;
- Cash transactions are random, that is, they occur in an unscheduled manner;
- The marginal cost of transfer is constant and does not depend on the size or direction of the transfer.

The figure below summarizes the idea of the Miller-Orr model:

Figure 2 - Miller-Orr model
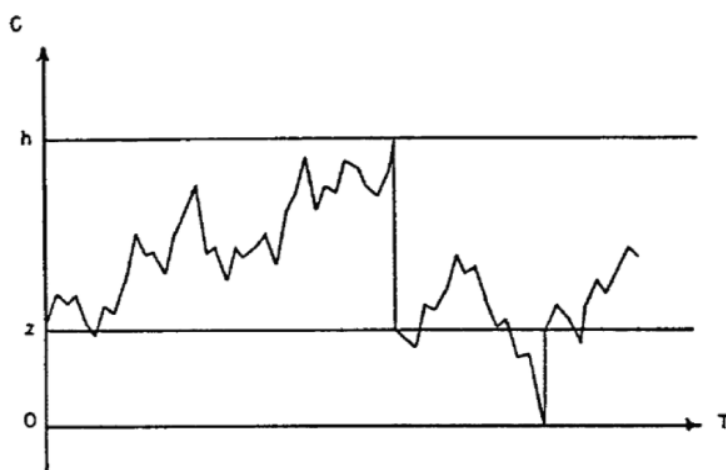
Source: ROBSON TAVARES, AC (2013) apud Miller; Orr (1968, p. 420).

From the figure above, Assaf Neto (2003) makes the following clarifications:

- There are two control limits: upper limit (h) and lower limit (O);

Implementation of Balmou, Miller and ORR Models as a Tool for Innovation and Competitive Strategies for Micro and Small Enterprises.

- When cash resources reach their maximum point (h), transfers in the amount (hz) to marketable securities should occur, reducing the volume of cash to the z value. Thus, the company will buy (hz) marketable securities, which will cause a reduction in cash volume;
- When the cash balance reaches its minimum limit, point 0, z marketable securities are redeemed and the cash value is raised to level z and the balance is restored;
- As long as the cash volumes do not reach the maximum and minimum limits, no decision will be made, and the cash will fluctuate freely.

The idea of the Miller-Orr model is to minimize the cost of cash requirements, based on the choices of the hez limits, with z given by the formula below:

$$z = \left(\frac{3.b.\sigma^2}{4.i} \right)^{1/3}$$

Where: b = fixed cost of transactions with marketable securities, which can be considered as an administrative fee or cost to redeem resources;

- σ^2 = Daily cash variance;
- i = Daily interest rate on marketable securities;
- Z = Desired cash balance. The company will seek to remain at this cash level, either by buying bonds (when it reaches point h) or by selling / redeeming securities (when it reaches point 0);

According to CEDERJ (2012), there are some steps for using the model:

1st Set the lower limit for controlling the cash balance. This lower limit must be associated with a minimum safety margin (L) determined by the company's management.

2nd Estimate the standard deviation of daily cash flows.

3rd Determine the interest rate

4th Estimate conversion costs arising from the purchase and sale of marketable securities.

The upper limit h is three times the value defined for Z. But, if a safety margin has been stipulated, h will adopt the following formula: h = 3Z -2L.

Implementation of Balmou, Miller and ORR Models as a Tool for Innovation and Competitive Strategies for Micro and Small Enterprises.

5.WEEKDAY MODEL

According to Tófoli (2008), this model is used in cases where seasonal variables affect cash flow. Leisure industries, for example, are concentrated on weekends. Assaf Neto (2002) states that the use of this model occurs from the existence of a certain pattern observed, thus having a prediction of the behavior of the cashier.

Generally, the behavior of the cashier over time is affected by a seasonal variable. It may happen that some companies have payments concentrated at the beginning of each month and in others, large movements at the end of the month. "The day of the week model is a way of predicting the cashier's behavior from an observed pattern" (ASSAF NETO and SILVA, 2002, p.97). Based on this model, the seasonal factor of each month and week is measured and, considering the forecast of the final cash balance for the end of the month, the daily flow is estimated through adjustments that take into account seasonality.

The cash management models presented represent important instruments to support the management of the liquidity level to be maintained. However, the decision-making process in the management of what is available must take into account two basic aspects: the cost of maintaining liquidity and the cost of the probable lack of liquidity. The cost of maintaining liquidity is obtained by the opportunity cost of this volume of resources, however, the cost of lack of liquidity is more difficult to measure (ASSAF NETO and SILVA, 2002, p.100).

For Fonseca (2009), one of the great advances in the study of finance theory was the creation of the management models of the available, which help the administrator to better organize the company's cash, taking into account the returns and the wealthy that involve the asset . The author also notes that the objective of managing cash is to ensure that cash and short-term investments guarantee liquidity and profitability for the company. However, for this to happen, it is important that the manager becomes familiar with the models presented, because:

> [...] the cash balances are strongly influenced by the production and sales techniques, since each model, in one way or another, is closely linked to the process of (purchase-stock-production-sale-receipt) which translates into a financial operating cycle (FONSECA 2009, p. 74).

Implementation of Balmou, Miller and ORR Models as a Tool for Innovation and Competitive Strategies for Micro and Small Enterprises.

CONCLUSION

The purpose of this article was to make a brief presentation of some concepts related to working capital. And to have the knowledge of how to control the inflow and outflow of cash from the cash, and enabling the scheduling in advance of the payment of their obligations, thus guaranteeing financial stability for micro and small companies, making it possible to take advantage of investment opportunities, and even if to prevent unforeseen internal and external factors that require an extra cash outflow.

Therefore, the present study reveals such models as an option in cash management, allowing micro and small entrepreneurs to choose what best suits the reality of their company, remembering that, regardless of the model being used, the success of planning cash flow depends on a constant monitoring of the company's financial movement (cash inflows and outflows), and the skill of the person who manages it.

REFERENCES

ALMEIDA, Amador Paes. Commercial companies manual (company law). 20th ed. rev. and updated. São Paulo: Saraiva, 2012.

CALDAS Vinícius. Finance classes. Available on the Internet via WWW. URL:http://aulasdefinancas.blogspot.com.br/2012/03/o-modelo-de-miller-orr.html , on 04/28/2013.

FONSECA José Wladimir Freitas Da. Budgetary and Financial Administration. Sao Paulo: IEDSE BRASIL SA, 2009

GITMAN Lawrence J. Principles of Financial Management, p. 662 to 693.

LOPES Fabio Souza. Cash management - a contribution to the management process. on the Internet via WWW. URL:http://www.revista.inf.br/adm05/pages/artigos/artigo03.htm, on 04/27/2013.

ROBSON TAVARES, AC; CARLOS EDUARDO RUSCHEL ANES; DIONÉIA DALCIN; Management and its diverse faces: Case Studies - Porto Alegre: Cidadela, 2013.
SANTOS Cristiane, JESUS Ricardo de, VENDRAME Francisco M. SC. Cash flow management. Available on the Internet via WWW. URL:http://www.unisalesiano.edu.br/simposio2011/publicado/artigo0023.pdf, on 04/28/2013.
SANTOS Douglas dos,**Cash Management: Implementation of a model for managing the current account and sending contributions.**Available on the Internet via WWW. URL:http://br.monografia.com/trabalhos3/gestao-caixa-corrente-envio-aporte/gestao-caixa-corrente-envio-aporte2.shtml, on 04/27/2013.

Implementation of Balmou, Miller and ORR Models as a Tool for Innovation and Competitive Strategies for Micro and Small Enterprises.

SILVA, DS Manual of accounting procedures for micro and small companies. 5. ed. Brasília: CFC: Sebrae, 2002.