



**ASHESI UNIVERSITY COLLEGE**

**CASH MANAGEMENT TOOL FOR MARYLAND MONTESSORI LEARNING  
CENTRE, AGONA SWEDRU**

**APPLIED PROJECT**

**BY**

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**Applied Project Report submitted to the Department of Business Administration, Ashesi  
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Science degree in Business Administration**

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**DECLARATION**

I hereby declare that this Applied Project is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere.

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I hereby declare that the preparation and presentation of the Applied Project Report were supervised in accordance with the guidelines on supervision of applied projects outlined by Ashesi University College.

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### ABSTRACT

Maryland Montessori is a school established to give its students a unique learning experience. Equipped with modern infrastructure and highly dedicated teachers, the school has risen to becoming one of the most preferred in Agona Swedru. Despite its successes, the school still has to deal with some problems as is the case of many other small enterprises. One of such is poor cash management. With the recurrence of late payments from parents for feeding fees and cash lying idle in the bank for the most part, Maryland is faced with constant cash shortages. The school deals with two main cash flows; tuition fee payments at the beginning of each term and feeding fee payments daily.

Literature reviewed proved a negative correlation between profitability and poor cash management. Based on research into cash management models, a tool using the Stone model was developed for the tuition fees and one using the Baumol model for feeding fees. These models calculate the optimal cash balance the school is to hold to cater for expenditure while preventing any cash shortages or surpluses. In addressing the problem of late cash payments, a discount model was generated for the school. In addition, a payment model that charges debtors an additional fee was set to induce parents to make timely payments. In order to make the discounts more effective, payment plans were proposed to shift from a daily to weekly basis.

With a more organized cash collection strategy through implementing discounts and follow-up strategies, Maryland can expect a great reduction in the incidence of late payments from parents. Furthermore, with measures in place to encourage investment as well, Maryland will reap returns which could lead to further development in the school.

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## **CHAPTER 1: INTRODUCTION**

### **1.1 CHAPTER OVERVIEW**

This chapter presents an evaluation of the external environment, industry and company. The PEST analysis is used in analysing the external environment and industry. An evaluation of the company's strengths, weaknesses, threats and opportunities is also done.

### **1.2 COMPANY PROFILE**

Maryland Montessori Learning Centre is a school established in 2002 with the aim of giving children a unique education experience. The motto of the school is, "Academic Excellence with moral integrity". Currently, the school runs from nursery school to junior high school. With an initial target of children between the ages of 4 months and 5 years, Maryland gradually grew to accommodate elementary school children as well. After 2 years of successful operation at its founding branch, Maryland expanded and opened a branch in Agona Swedru. This branch from the onset was meant to accommodate a greater student population with far more advanced infrastructure. Infrastructure readily seen at the school are a large canteen, soccer pitch, an ICT lab and a modern playground. The Swedru branch accommodates a population of about 770 students whereas the Accra branch a population of about 40 students. Aside its teaching services, additional services provided by the school are dance lessons and boarding services. There are currently 28 students living in the boarding house. There are approximately 60 teachers at the Swedru branch setting the teacher student ratio at 1:13. Over the years student population continues to increase. The average graduation percentage for the school is 90% based on their performance in Basic Education Certificate Examination (BECE). About 80% of these graduates make it to Senior High School (SHS).



### **1.3 RATIONALE FOR STUDY**

Currently, Maryland is among the top choices of parents for their wards. With a unique curriculum, along with highly motivated teachers it is no surprise that parents in Swedru and beyond would prefer for their children to be educated there. From prior discussions with management, it was revealed that the school relies solely on fees paid by students and no external funding. Money from school fees is reserved to fund larger projects thus, whereas the money paid by students for the feeding program ends up being used to settle utility debts as well as catering for other expenditure, the money from school fees lies idle for the most part.

Considering the circular flow of this money, it is essential that all cash is collected to prevent a case where there are insufficient funds to cater for an expense. Based on this and the knowledge acquired from prior courses in Financial Accounting and Managerial Accounting, Maryland Montessori Learning Centre was selected to propose a more efficient system for cash collection.

### **1.4 OBJECTIVE OF PROJECT**

The objective of this project is to analyse the current cash management stance of Maryland Montessori Learning Centre. Based on this analysis and secondary research, a cash management tool is proposed. This new system would allow for better collection of cash in the school as well as reaping the benefits of the investments they make.

### **1.5 INDUSTRY REVIEW**

The educational sector of every nation is at the heart of the nation as it involves the training of the work force. Maekae and Kingdom (2013) assert that education is a crucial part of a nation as it supplies the needed manpower for development. Education in Ghana covers both the formal

and informal sector however, in this paper the focus would be on the formal education sector. In Ghana, the primary governing body or controller of education is the Ministry of Education. The Ghana Education Service is the body in charge of implementing policies formulated by the Ministry of Education in respect of primary and secondary education. The Ministry of Education has ten regional offices - one in each region- which are responsible for the proper implementation of the national educational policy in their various jurisdictions. They are also charged with the duty to supervise, compile and analyse data as well as budgeting for their regions. The body in charge of holding national examinations in both primary and secondary education is West African Examinations Council (WAEC).

Ghana's education system runs on a 6-3-3-4 structure. This means 6 years of primary education, 3 years of junior high school, 3 years of senior high school and 4 years of university education. In 2007, when the secondary school system was swapped for a high school system the senior high school system was expanded to four years without making significant changes to the curriculum. This was reversed after three years, hence there were no graduates in 2010, and two cohorts graduating in 2013.

Currently, the official language of instruction in Ghanaian education is English, yet in some areas, local dialects such as Twi, Ga and Fante are used for instructions for the first years of primary education. An academic year in the country usually runs from August to May inclusive. Primary education and junior secondary education are freely accessible in Ghana. The basis for this is the 1996 Free Compulsory Universal Basic Education (FCUBE) Programme. The aim of the programme was to grant each child access to high quality basic education by 2005 (Anon,

2015). A similar initiative called the Free SHS scheme was introduced in 2017 to grant students free SHS education.

Primary education runs for a span of 6 years, with 3 years for the lower primary and 3 for upper primary. During primary education, more emphasis is placed on English, Math and Science. As mentioned earlier, students are also taught some local dialects such as Twi, Ga and Fante. The secondary cycle is also divided into the junior and senior phases. Currently, they each run for 3 years each as well. During the junior secondary phase, pupils are taught subjects such as English, Mathematics, Social studies and Integrated Science in addition to basic design and technology, religious and moral education, French and ICT (Anon, 2015).

At the end of the junior phase, pupils sit examinations to obtain the Basic Education Certificate Examination (BECE). At the secondary cycle phase, however students are at liberty to study a preferred course. Courses that run include Business, Arts and Science. When transitioning from primary school to high school it has been noted that the rate falls by about 16%. In the years 2011-2012, the percentage of children between the ages of 6 and 11 attending primary school was 96.5% but somehow the percentage of children between the ages of 12 and 14 in junior high school fell to 80.6% and further down to 37% in senior high schools (Modern Ghana, 2013).

## **1.6 EXTERNAL ANALYSIS**

In conducting the external and industry analysis the PEST (Political, Economic, Social and Technological) model is used. This analysis captures both information about the country and information related to the education sector.

### **1.6.1 Political**

Since 1992, Ghana has been identified as one of the most politically stable countries due to its transition to a multi-party democracy. In Ghana, it is arguable that the education system is not performing up to expectations. With about 6% being invested into the educational sector it is expected that it performs way better (Modern Ghana, 2013). On the basis of the 1996 Free Compulsory Universal Basic Education (FCUBE) Programme, many children have access to free public education in the country. In 2016, the New Patriotic Party (NPP) administration after coming into power begun to work on realizing one of their main campaign promises, the free SHS scheme. This scheme has allowed for more children to continue their education. This serves many benefits to elementary schools like Maryland as more children are likely to return to school hence to some extent guaranteeing more fee payments. Another key factor to note in analysing the political environment of the educational sector is the change in the senior high school cycle by the various governments. In 2007, the senior high school system was introduced expanding the system to four years under the NPP administration but quickly after three years the National Democratic Congress (NDC) government changed it back to 3 years (U.S Embassy, 2018). This has been maintained since.

### **1.6.2 Economic**

As at 2016, the Gross Domestic Product (GDP) for the nation was reported to be \$42.69 billion (World Bank, 2017). This was a noticeably sharp increase after the GDP of the nation was seen to steadily decline for the previous 3 years. In the 2017 budget, the allocation of GDP to the education sector saw a 10% increase which was in relation to the amount apportioned to it in 2016. This increment was greatly associated to the free SHS policy which represented about 5%

of the increase. The rest of the increase is attributed to the restoration of teacher trainees and nursing student allowance (Anti, 2017). Aside government contributions, the education sector is funded by other bodies like donor support (average of 3.5% over the past 6 years), GetFund (average of 8% for the past 6 years), Annual Budget Funding Amount (ABFA) (1% average) and Internally Generated Funds (IGFs) (12% average). However, due to their unreliability, government may still have to increase expenditure in the education sector (Anti, 2017).

According to Trading Economics (2018), there was a corresponding increase in GDP per capita by 1.29%. This increase presumes citizens would have more disposable income which presupposes that people would move towards private schools. According to the Executive Director of the Students Loan Trust Fund, Sheila Naa Boamah, as at 2016, the minimum amount for student loans had increased from GHc650 to a GHc1,000 and the maximum had increased from a GHc1,600 to GHc3,000 (Allotey, 2016). With more student loans available, more students are assured continuance of their education.

### **1.6.3 Social**

Social factors, which include population, religion, employment levels and culture have a bearing on how the educational system runs. Currently, the population of Ghana is 29,165,070 with an average of live births per day of 2,667 (United Nations Department of Economic and Social Affairs: Population Division, 2018). This increase in population suggests the need for more children to be enrolled in schools, thereby causing demand for schools in Ghana to rise. In most schools in Ghana, in order to qualify to be a primary teacher, the minimum educational level to have reached is SHS thus allowing for more individuals to qualify for the position. Considering

the relatively low minimum requirement for qualification, the primary school industry presents itself as very attractive to a large number of individuals.

Ghana is made up of a vast number of religions under the various ethnic groups and although the nation is predominantly (71.2%) Christian (Index Mundi, 2018) there are quite a number of Muslim schools present which allow for their religion to be passed on too. Additionally, the introduction of languages such as Akuapem Twi, Ga and Fante to the curriculum helps keep citizens abreast with their cultural makeup. In Ghana, there are more than 250 spoken languages (Embassy of Ghana , 2018). Thus, the teaching of the local dialects helps keep the culture alive.

#### **1.6.4 Technological**

Considering the vast advancement of technology in the country and world at large even at primary school level, a certain level of technological advancement is required. With courses like ICT being introduced into the Ghanaian curriculum, students are expected to grasp some level of understanding of technology and not simply book knowledge but practical experience as well. In 2016, in the government's bid to keep up with the technological competence of students, distributed RLG laptops to various schools in the country (Nyabor, 2016). In universities like Lancaster University and Ashesi University, technology has facilitated the use of teaching aids in lecture halls through the use of smart boards and projectors. It is projected that in the next few decades, the business sphere of the nation would be driven by technology (Eduku, 2016). Online learning platforms over the years have allowed for students to be able to study on their own. Thus, it is essential that the schools get abreast with technology and ways to judiciously use it to prevent being overtaken by online platforms.

### **1.6.5 Legal**

The educational sector is guided by various acts with the most fundamental being the Education Act of 1961. This act states that "every child who has attained the school going age as determined by the minister shall attend a course of instruction as laid down by the minister in a school recognized for the purpose by the minister." Article 25 of the Ghanaian constitution mentions that basic education shall be free, compulsory and available to all. Yet, this is not being entirely practiced in the nation. Shaibu (2017) reports that there are still some public basic schools collecting fees from students.

Every business is regulated by laws and schools are not any different. In terms of employment, under the Ghana Children's Act, 1998, no children under 15 cannot be employed. Thus, with schools, employees would each have to be above 15 years old. Additionally, there are regulations in place to ensure that teachers do not mishandle students in any way.

### **1.6.6 Environmental**

In Ghana, environmental policies are regulated by the Environmental Protection Agency (EPA). They ensure the conservation and preservation of the environment. Article 41 of the 1992 constitution puts forth that all citizens of Ghana are required to join in the protection of the environment. This applies to all enterprises, large and small (Adjarko, Gemadzie & Agyekum, 2016). Thus, a school like Maryland has the obligation to safeguard its environment and ensure that activities they engage in do not destroy the environment.

It is arguable that schools are putting in immense effort in enforcing this law. The inclusion of

subjects like Environmental Studies to the curriculum instil in students a sense of environmental awareness. The continuous stress on the need to recycle and reduce pollution has shaped the mind sets of the children into becoming more environmentally conscious. Thus, rather than just living in a manner to safeguard their surroundings, schools are putting in extra effort to see progression.

### **1.7 SWOT ANALYSIS**

In analysing the internal operations of the school, a SWOT analysis which is a framework used to analyse the internal strengths and weaknesses, as well as the external opportunities and threats of a company was used.

#### **1.7.1 Strengths**

Maryland has very skilled and trained staff that contribute to the success of the school. The school accommodates a system that allows for staff to learn from each other improving their efficiency each day. With a low student to teacher ratio (13:1), students benefit tremendously from their teachers' knowledge. Over the years, the school has realized above 90% graduation rate of students. That is, about 90% of students in their final year all graduate from school with about 80% of them making it to SHS after their BECE examinations. Both parents and students of the institution have proven to be very active and engaged in the school's activities. This allows for the school to advance positively. It is undeniable that the relatively unique curriculum of the schools makes them stand out from competitors. With an integration of creative arts into their curriculum the school has become a preferred choice by students and parents. Finally, the



school is located close to the main road making it an easily accessible location for parents, students and even staff.

### **1.7.2 Weaknesses**

As it stands, the major weakness of Maryland is their low involvement in technology. In the school, little use of technology is used hence students do not get enough practical knowledge of ICT tools. Another issue which this paper seeks to address is their poor cash management techniques which makes them realize less profit than they are supposed to.

### **1.7.3 Opportunities**

A major opportunity for the school is the introduction of the free SHS scheme by the government. This scheme has pushed a lot of children back into the educational sphere with hopes of getting free SHS education. With very active students and parents, there is easy access to feedback and this would help serve as a means to develop. A general improvement in the economy of the nation also serves as an opportunity for the growth of the school.

### **1.7.4 Threats**

Despite the school's uniqueness, competition poses a threat to them. As the years go by new competition arises whereas the old competition improves their systems. The fast advancement of technology too serves as a threat to the school as their inability to keep up can leave them outdated. Thus, they must do well to get more abreast with technology.

<b>STRENGTHS</b> Highly skilled and trained staff	<b>WEAKNESSES</b> Low use of technology
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High graduation percentages Highly involved parents and students Unique educational curriculum Easy accessibility Many co-curricular activities	Poor cash management
<b>OPPORTUNITIES</b> Free SHS policy Ask students and parents for feedback Improvement of the economy	<b>THREATS</b> Competition Technological advancements

*Figure 1.1* SWOT table for Maryland

## **CHAPTER 2: NEEDS ASSESSMENT**

### **2.1 CHAPTER OVERVIEW**

This chapter covers the method used in collecting data from the relevant stakeholders for the project; finance leads and proprietress. Insights gained from data collected is also explained in this chapter.

### **2.2 NEEDS ASSESSMENT**

A needs assessment is defined as systematic process of examining a population to assess the current state of affairs and approaches pertinent to the focus of the needs assessment (University of Minnesota, 2018). The purpose of a needs assessment is to guarantee that a particular problem exists within the subject of research. In this paper, the subject of research is Maryland Montessori Learning Centre. The objective for the needs assessment was to identify the state of cash management by engaging all relevant stakeholders as well as gaining a firm understanding on how funds are used. Specifically, the cash collection strategy and investment plan of the school were analysed. The method in which this was done is described below.

### **2.3 PROBLEM STATEMENT**

Maryland Montessori Learning Centre, a basic school in Agona Swedru does not have a proper cash management structure in place resulting in the regular incidence of cash shortages.

### **2.4 RESEARCH DESIGN**

This research adopts a mixed methods approach aimed at gaining insights into the current cash management practices of Maryland Montessori Learning Centre. This approach for conducting research involves collecting, analysing and integrating quantitative (e.g., experiments, surveys)

and qualitative (e.g., focus groups, interviews) research. It is adopted because it provides a better understanding of the research problem than either of each alone. In addition, it enabled the researcher gain in-depth understanding of the research problem, while revealing the weaknesses of using each approach alone.

## **2.5 RESEARCH POPULATION AND SAMPLING TECHNIQUE**

The target population is the parents, finance lead and proprietress of the school. In selecting the parents, the convenience sampling technique was used. This was due to the fact that parents were only available at the beginning and close of day to pick up children and only the available ones were able to fill out the form. Nevertheless, the study ensured to capture an unbiased population. In total, there were 14 respondents.

## **2.6 DATA COLLECTION**

In this study, interviews, surveys and inspection of records were conducted in collecting data. Unstructured interviews were conducted with the finance lead and proprietress. The use of unstructured interviews allowed for richer data as the conversation was allowed to flow based on the interviewee's responses. The guidelines for both interviews are attached in the appendix below. With the finance lead, the purpose of the interview was to gain an understanding of how cash is collected in the school as well as any investment plans in place. With the proprietress, the interviews were primarily aimed at assessing the school's current state of investment.

Apart from interviews, questionnaires were given out to parents to grasp their perspective of the current feeding fee collection system as well as gain an insight into any developments they wish

to see. The questionnaires were distributed to available parents at the close of day to fill. These questionnaires sought to identify their preferable mode of payment, occurrence of payments and find out reasons for late payments.

The last method used was the inspection of current documentation of the school. The financial records of the school regarding cash collection methods for their feeding program were analysed to gain a clearer overview of the cash collection practise.

## **2.7 KEY FINDINGS**

### **2.7.1 Interview**

The interviews conducted were meant to derive a deeper understanding of the issue by engaging the relevant parties of the issue. From the interview with the finance lead, Mr. Fosu, some key insights were gained and they are outlined below. The interview guide which was used is included in the appendix below (Table 1.1)

#### **2.7.1.1 Sources of revenue**

The main sources of revenue for the school are school fees, feeding fees and boarding fees. A key insight drawn is that currently, the school fees is kept in the bank whereas the feeding fees is what is used to cater for almost all operating expenses. Thus, whereas the school fees remain somewhat idle throughout the term, the feeding fees are used to purchase the food stuffs, settle water and electricity bills, purchase stationery and other materials. Reason for this is currently, the proprietress is the only signatory to the bank account into which school fees are paid thus

until she is available, they have to rely on the feeding fees. This, the finance lead explained, has resulted in them experiencing more cash shortages than surpluses.

#### 2.7.1.2 System used in collecting fees

With regards to feeding fees, students are expected to pay on a daily basis. For pupils in nursery and crèche, the charge per day is GHS 1.5 whereas other pupils pay GHS 2. Currently, only about 80% of the school's population adhere to this by paying daily. The other 20%, comprise people who pay weekly, monthly or termly. For those who pay daily, parents usually give the money to the children to pay or sometimes the driver. This practise of collecting daily payments as pointed out by the finance head is based on ability. That is, taking into consideration the financial capacities of the parents, allowing daily payments makes it easier for parents to pay as supposed to collecting a lump sum. Tuition fee payments however are made at the beginning of each term into the school's bank account.

#### 2.7.1.3 Mode of payment

For feeding fees, parents usually pay by cash but 1 in 300 of them would add the feeding fee payments to tuition fees when making payments at the bank.

#### 2.7.1.4 Reasons clients give for late payment

Mr. Fosu could boast of a large number of the parents making timely payments of fees yet for those who do not, it is a different ball game. For some of them, they believe that for a school of its standard, a little amount of money would not hurt thus they tend to shrug the need to pay off. For other parents, late payments are simply due to their inability to pay. Unfortunately, there is

no current structure in place to accommodate indigent parents. These reasons apply to both feeding and tuition fees.

#### 2.7.1.5 Current follow up method to enquire about payments

The administration of the school sends out news letters to unsettled parents and follows up with phone calls. This method is used for all parents regardless of the amount due. It was noted that since they were dealing with children and with the existence of competition, not too much force could be put on them. Rothschild (1979) notes that pestering of debtors constitutes a significant problem in that it tends to cause non-payment thus making it counter-productive. Thus, they try as much as possible to be subtle with their reminders.

#### 2.7.1.6 Effects of late collections on daily operations

The prime effect of late payments of feeding fees is the reduction of cash in hand for settling expenses. Considering the rather rapid flow of funds, it is necessary that they have a lot of cash available to them, either in hand or at bank. For school fees however, late payments are not felt as much since the money would just end up lying in the bank.

#### 2.7.1.7 Willingness to invest excess cash to enjoy returns

Considering their low risk tolerance, Maryland is willing to invest excess feeding fee payments if available in short term securities as they are generally less risky and easier to liquidate.

The interview brought to light the school's plans of implementing a new feeding fee collection practice soon. The current one as they expressed, is the only one that has been in use

since the establishment of the school. During the interview, the finance head pointed out that he had had experience with quite a number of schools in the same area so he could attest to the fact that they were all using similar systems in their schools. However, compared to competitors in Accra, their system seemed quite outdated thus their desire to move to a new one. His mention of the account management prompted an interview with the proprietress of the school to gain further insight into what happens to school fees since the administration has limited access to it.

From an interview with the proprietress, the following key insights were drawn. The interview guide that governed this interview is attached in the appendix below (Table 1.2).

#### 2.7.1.8 Use of funds

Tuition fees paid into the school's bank account are being used as the primary source of funding for construction of new buildings and acquisition of new equipment for the school. Currently, the school is in the process of one of such expansions thus an amount of that money is being invested there. The school fees are also used to pay workers' salary.

#### 2.7.1.9 Willingness to invest excess cash to enjoy returns

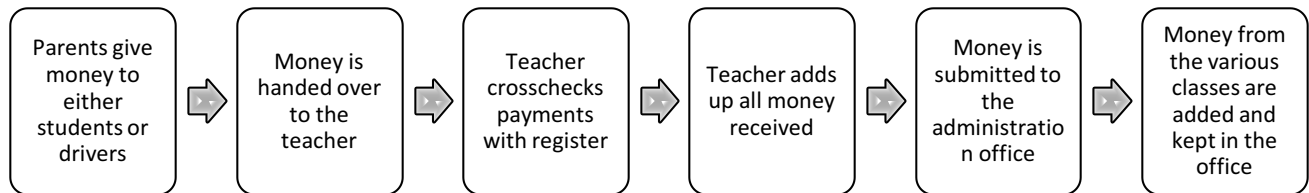
On the topic of investment, the proprietress made it clear that she is willing to invest any idle funds they may have but is open to any suggestions on where this investment would happen.

With a moderate risk tolerance, she is willing to invest in any form of short-term instruments to enable easy and ready access to funds.

Also, it was noted that currently, all records for the entire school are kept in two notebooks; one for amount collected and the other for debtors. Every class has register which the teacher uses to



track payments. After each student has completed payments that day, the teacher collects all the money, crosschecks with the register and submits the money collected to the administration. The administration then recounts the money, takes note of the debtors, records the amount and keeps it in a drawer. At the end of the day, the total is drawn and kept for later use. Figure 1.2 shows this process.



**Figure 1.2** Flow diagram of collection process

## **2.7.2 Questionnaire**

### **2.7.2.1 Mode of payment**

For most parents, feeding fees are settled in cash and tuition fee payments are made at the bank at the beginning of the term.

### **2.7.2.2 Frequency of payment**

With regards to how often they would want to make payments, most parents were comfortable with the daily payments but for others, a shift to weekly or monthly payments would be more favourable.

### **2.7.2.3 Reasons for late payments**

The most recurrent reason for making late payments was being broke. Parents expressed that having no cash on them caused them to delay payments and this was traced back to late salary payments.

#### 2.7.2.4 Discount effect

Majority of the parents were in favour of the idea of employing discounts. They were of the view that it would induce them to make earlier payments.

#### 2.7.2.5 Follow-up on late payment

With regards to reminders, parents would want to be receive follow-up notifications on expenses owed via phone calls or newsletters.

### **2.8 INFERALLS FROM FINDINGS**

#### **2.8.1 Interviews**

Both interviews gave a clearer understanding of the current state of the school. The results of the interview defined the problem as one of inefficient cash management practices. Thus, due to their slow cash collection, the school usually has to deal with cash shortages yet they have idle funds in accounts reserved for larger projects due to the developing nature of the school. This presents the need for an efficient tool for cash collection for the feeding fees as well as an investment tool for the tuition fees.

#### **2.8.2 Questionnaire**

Responses form the questionnaires revealed that parents are currently comfortable with making daily payments for feeding. Nevertheless, some would be willing to switch to a different payment plan. Their interest in the notion of discounts shows that if implemented it will induce them to make more timely payments.

**2.9 SYNTHESIS OF KEY PROBLEMS**

ISSUE	FREQUENCY	EFFECTS
Late feeding fee payments by parents	About 1 in 200 parents make late payments each week	The school has to deal with cash shortages since feeding fees are used in settling operating expenses.
Idle cash	Besides salaries paid out at the end of each month and occasional building expenditure, fees are left lying idle in the school's bank account.	The school loses out on prospective profits it could make from investing in securities.

## **CHAPTER 3: LITERATURE REVIEW**

### **3.1 CHAPTER OVERVIEW**

In this chapter, a study of relevant literature concerning the themes identified from the needs assessment stage is done. The relevant subsections covered in this chapter include: Working Capital Management, Cash Management, Cash Collection, Idle Cash Investments and Models of Cash Management. This chapter also adopts a case study approach to examine cash management practices in some organizations.

### **3.2 WORKING CAPITAL MANAGEMENT**

The importance of working capital management to any organization cannot be overemphasized. According to Mandal and Mahavidyalaya (2010), working capital management is key to running the wheels of a business. The viability of a business relies greatly on its ability to manage its current assets and current liabilities. Many authors and industry professionals have approached the topic from different standpoints. While Park and Gladson (1963) view this topic based on the flow of funds, Hunt et al (1980) focus on how large commitment of funds should be in different assets.

Peel and Wilson (1994) as cited by Pieterston (2012) assert that efficient working capital management is more vital in small and medium enterprises than large enterprises as they are less likely to have access to financial expertise. The United Nations Industrial Developmental Organization (UNIDO) in defining small and medium scale enterprises (SMEs) use number of employees as the sole determinant. (Elaiian, 1996). For large firms, 500 or more workers; medium firms with 100 to 499 workers and small firms with 99 workers or less. Following this category, Maryland Montessori, with approximately 60 staff would be classified as a small firm.

According to Peel and Wilson (1994), key practices that exist for SMEs include: reliance on trade credit and bank overdrafts for short term financing, willingness to grant overgenerous credit terms to obtain business and weaker control procedures.

Empirical studies show that ineffective management of working capital is one of the main factors causing industrial sickness (Yadav, 1986). A company should choose between liquidity and profitability and decide about its working capital requirement (Kumar & Venkatachalam, 1995). Modern financial management aims at reducing the level of current assets without ignoring the risk of stockouts (Bhattacharya, 1997). Thus, a firm should formulate relevant policies to control the working capital to avoid any form of financial distress, which may occur in future (Luther, 2007). Efficient management of working capital is, therefore, an important indicator of sound health of an organization.

The policies for managing the working capital of a firm as defined by Mandal, N., Mahavidyalaya, D. B., & Goswami, B. S. (2012) should be such that the firm can accomplish its three important goals simultaneously: *adequate liquidity, maximizing profitability and minimizing non-insurable risk and uncertainty*. Despite the varying views held by Park and Gladson (1963), Hunt et al (1980), Luther (2007) and Yadav (1986), it is held that the ultimate goal of working capital management is to manage the firm's current assets and liabilities well such that a satisfactory level of working capital is maintained in the business.

According to Horne (2000), he classifies working capital management into three folds – cash management, receivables management and inventory management. However, in the next section,

the focus lies more on cash management as it addresses the theme of poor cash collection from the firm (Maryland) under study.

### **3.3 CASH MANAGEMENT**

As discussed, working capital management involves the management of current assets against current liabilities. In analyzing the broad concept of working capital management, a key ingredient that cannot be overlooked is cash management. Cash management basically refers to the proper handling of cash and ensuring that enough balance is kept in hand to be used for operation. Just like working-capital management, cash management has been viewed from different perspectives leading to similar conclusions; effective cash management leads to the efficient running of the day-to-day operations of a firm. While Miller and Orr (1966) view cash management as a portfolio problem where the firm must balance cash holdings with holdings of interest-paying assets, Robichek et al (1965) assert that cash management is a more general resource allocation amenable to solution using linear programming, and several other authors followed this approach.

In most instances, it is found that more focus is placed on keeping a minimum cash balance as compared to setting a maximum cash balance. Nonetheless, Gallagher and Andrew (1997) point out that keeping a maximum cash balance is equally important especially when trying to speed up cash collection. This is because, the maximum cash balance causes firms to operate within a specified boundary thus reducing the incidence of keeping excess cash in hand. This surplus cash could instead be invested in securities. In their analysis, they however do not downplay the significance of setting a minimum cash balance as it ensures that firms always have enough cash in hand to cater for unforeseen obligations. From the interview with the head of finance, it was

revealed that currently Maryland has not set either a cash minimum or maximum balance which results in them experiencing cash shortages often. Setting a minimum cash balance would guide them in always having enough money to be used when necessary. Setting of a maximum cash balance will also help them to know when they should invest excess cash to generate returns. Gallagher and Andrew (1997) layout three basis for setting a maximum cash balance; the availability of investment opportunities, the expected returns from the available investment opportunities and the transaction cost of withdrawing and making an investment. Thus, in setting the maximum cash balance for a school like Maryland, these three conditions should be considered.

In conducting a thorough analysis of cash management, the motives for holding cash should be considered as it lays a foundation to understanding how cash can be managed properly to prevent shortages.

### **3.4 MOTIVES FOR HOLDING CASH**

Keynes (1936) as cited by Gitman et al (1979) explained the main reasons for holding cash balances are transactional, precautionary and speculative. The first, transaction balances are kept to cover known obligations. For example, the settlement of utility bills. The amount of cash held for this depends greatly on the prevailing interest rate and the costs associated with investing idle balances. Precautionary balances are held to cater for any uncertainty. For example, the unforeseen need to replace a certain supply. This is dependent on the opportunity cost of funds. Speculative balances are held with the expectation of having to take advantage of an expected opportunity that may arise at future date. For example, to purchase school supplies at a suspected discount sale from the book store.

Cash management policies vary between minimizing cash collection, minimizing investments, slowing down payments and minimizing bank balances among others. The adoption of each policy is dependent on the type and size of a firm. According to a survey conducted by Gitman et al (1979) that involved the top 150 and bottom 150 firms on the Fortune list of the 1000 largest firms, respondents ranked speeding up collection of accounts receivable as the most important cash management policy. This survey also showed that smaller firms are more likely to hold cash for transaction purposes whereas larger firms hold it for precautionary purposes. Against this background, it would not be wrong to assume Maryland Montessori holds cash for more transactional purposes.

According to Shim (1981), successful cash management involves not only avoiding insolvency by setting maximum and minimum cash balances but it also involves increasing cash collection rates to improve a firm's cash position. In the next section, cash collection is discussed to highlight the importance for Maryland to enhance their profitability and liquidity needs.

### **3.4 CASH COLLECTION**

Cash collection has been proven to be an integral aspect of cash management. Abel (2008) argues that cash is crucial in every business in terms of survival. Thus, managers must make every effort to ensure that they collect all cash from debtors. Cash collection refer to the recovery of cash from parties who have enjoyed your paid services. The impact of cash collection on the liquidity of a firm cannot be underestimated. Adequate liquidity is essential for the growth of a firm due to the accessibility of funds needed for operations. Timely cash collection puts a firm in a position of liquidity which is necessary in anticipation of settling future obligations (Mandal, Mahavidyalaya, & Goswami, 2012). In relation to the survey



conducted by Gitman et al (1979), it can be inferred that majority of the firms placed emphasis on speeding up cash collection in an attempt to keep themselves adequately liquid for transaction and precautionary purposes. In context, by Maryland speeding up their cash collections, they would gradually attain a better liquidity position thus preventing the incidence of cash shortages.

To take advantage of high returns, a firm should invest every available dollar in an interest-bearing vehicle to better enhance its profitability. The next section delves into the benefits of idle cash investment for small firms such as Maryland.

### **3.5 IDLE CASH INVESTMENT**

There is no single definition of what constitutes an investment. Investments can be defined as but not limited to “shares, stocks and other forms of equity participation in an enterprise” or any “interests arising from the commitment of capital or other resources in the territory of a party to economic activity in such territory” (Yannaca-Small & Liberti, 2008). They may be referred to as instruments for securing future income. The International Centre for Settlement of Investment Disputes (ICSID) defines an investment as having four elements; a monetary contribution, a duration, an element of risk and a contribution to economic development.

Idle funds refer to money which are not earning any interest. They are often thought of as wasted funds since they make no appreciation in value (Investopedia, 2018). The investment of idle cash is another integral aspect of cash management. When idle funds are invested, they bring in benefits. Adu (2013), asserts that the investment of current assets such as cash be closely monitored as they tend to more unstable. Although the investment of cash takes a toll on a firm’s level of liquidity in the long run it has the tendency to make a firm more profitable. That is, a

firm makes interest or generates revenue off those investments as supposed to leaving the funds lying idle. The decision to keep cash on hand as supposed to investing it is sets the basis for the principle of the liquidity-profitability trade-off, which would subsequently be reviewed in the next section.

### **3.6 LIQUIDITY-PROFITABILITY TRADEOFF**

The liquidity-profitability trade-off principle stems from the incidence of some organizations having to decide which of the two (keeping cash on hand or investing) to do. Whereas liquidity represents the ease with which current assets may be converted into current assets without suffering a loss profitability speaks to a firm's ability to earn profit based on its available resources. Although both of them are dependent on the effective management of a firm's assets and liabilities they suggest different things. The level of liquidity suggests the capability of a firm to meet its short term financial obligations (Ajanthan, 2013) yet profitability measures the operating efficiency of it. Efficiency of a firm refers to combining resources in a manner which produces a given output at the lowest possible average cost. The greater the profitability of a firm, the more its efficiency (Walt, 2009).

According to Kumar and Venkatachalam (1995), a company should choose between liquidity and profitability and decide about its working capital requirement. Current financial practices work towards reducing the amount of current assets held without compromising on stockouts. Thus, a firm has to put measures in place to control working capital to be able to cater for both present and future obligations. Although the level of current assets kept in hand should be monitored, it is necessary that a firm ensures that it does not suffer from the deficiency of

liquidity. The lack of sufficient liquidity may affect the firm negatively by resulting in loss of creditors' confidence and high cost of borrowing.

The importance of both profitability and liquidity cannot be understated. Nevertheless, some authors hold one more importantly than the other. For example, Walt (2009) asserts that profitability is more important as it is easily convertible into a liquid asset and that although liquidity may be important it does not guarantee that a company is profitable. Don (2009) on the other hand holds that liquidity is more important as it has more to do with immediate survival of the company. What all these views still acknowledge is the importance of the other. Thus, regardless of which a firm decides to hold more dearly, it is necessary that the other is not neglected. As revealed by the study in Gitman et al (1979), smaller firms tend to hold liquidity more dearly for transaction purposes.

### **3.7 MODELS OF CASH MANAGEMENT**

Many models have been propagated in the field of cash management. The three most popular ones are the Baumol Model, Miller-Orr Model, and the Stone Model. Before 1972, there were only two widely used cash management models. The model propagated by William Baumol suggested complete certainty of cash flows whereas that developed by Merton Miller and Daniel Orr proposed uncertainty of cash flows. The Miller-Orr Model corrects some of the deficiencies of the Baumol Model by accommodating a fluctuating cash flow stream that can be either inflow or outflow. The Stone Model in turn served as an improvement of the Miller-Orr model.

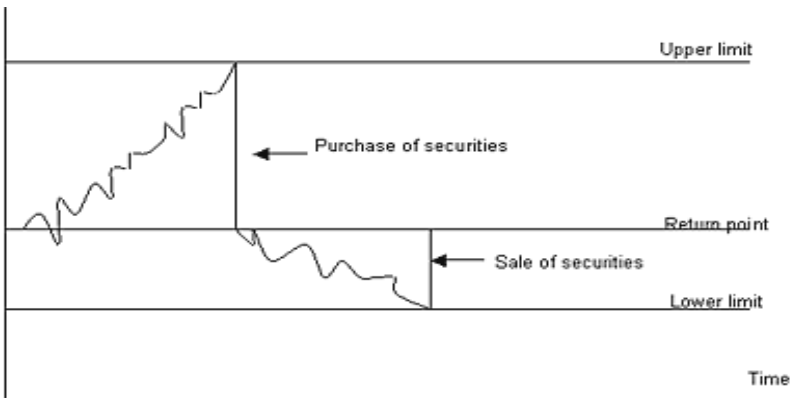
The Baumol model of cash management assesses the demand for cash, cost of holding cash and transaction costs of a firm in determining the optimum cash balance of a firm. This model

assumes periodic cash inflows with a steady cash outflow. That is, inflows are lumpier than outflows. Under this model, when cash is received, cash is kept in a disbursement account until the next inflows. The assumptions that guide this model are;

1. The cash needs of the firm are known with certainty.
2. The cash disbursements of the firm are certain and are steady.
3. The opportunity cost of holding cash is known and remains constant.
4. The transaction cost of converting securities into cash is known and remains constant.

The Miller-Orr Model on the other hand is a tool that sets firms within an upper and lower boundary of cash balances to ensure that they do not deal with either excess cash in hand or too little. This model proposes that between the maximum and minimum an optimal cash balance should be held and it assumes uncertain cash flows which randomly fluctuate between the maximum (upper) and minimum (lower) boundaries (Gallagher & Andrew, 1997).

When the cash reaches or passes the upper boundary, the firm would invest the difference between its current cash balance and the optimal cash balance. On the other hand, when it falls to the lower boundary, the firm must restore their cash balance to the optimal level by converting investment into cash (Miller and Orr, 1966). The implementation of such a model helps firms to keep themselves adequately liquid without compromising on their profitability. It is better explained in Figure 1.3.



**Figure 1.3 Miller-Orr Approach to Cash Management**

The Stone model is a slight development of the Miller Orr model and is built on basically the same assumptions. Yet, unlike the Miller-Orr model does not result in immediate investment or liquidation of assets. Rather, upon exceeding or falling below the upper or lower limit respectively, a forecast of cash flows is done to decide on whether or not to invest or disinvest.

### **3.8 CASE STUDIES**

In a study of 1000 SMEs in the Northern Region of Ghana, Hamza, Mutala and Antwi (2015) emphasize on the fact that firms in the Northern Region do not manage cash well and seem to not have embraced efficient cash management practices in their operations. The study revealed that owners relied more on their personal experience as supposed to implementing strategies to effectively manage cash. The problem of inadequate liquidity was the most frequent in the sampled SMEs. Their findings suggested that on average many SMEs hardly determined an appropriate amount for cash to hold which resulted in either cash surpluses or shortages. This suggests the importance of implementing a cash management model as their failure to set limits to cash balances were the causes of cash shortages.

This study also sought to establish the relationship between cash management and financial performances of SMEs. Using the Pearson's correlation coefficient, it was established that there is a positive correlation between business performance and cash management practices. That is, the better cash is managed in a firm, the better the firm performs. A similar conclusion was arrived at by McMahon (2001) in his study of 1763 Australian SMEs to measure the impact of cash management practices on business growth showing the widespread nature of cash management problems.

Extensive research has been conducted to understand the factors that lead to the success and failures of small businesses (Kennedy, Tennent & Gibson, 2006). Watson, Hogarth-Scott and Wilson (1998) affirm that majority of businesses fail due to financial problems. In a study of 166 small enterprises in the United Kingdom, the authors realize that small businesses usually fail after a few years of operations due to internal factors that relate to finances. This study identifies cash flow problems, low earnings and limited access to financing as part of the most prevalent reasons firms fail. Based on the understanding that Maryland is a small firm, it is necessary that measures be put in place to address matters that pertain to cash flows to prevent failure. In the same vein, Bruno, Leidecker and Harder (1987) in a study of 250 firms mention financial problems as one of the main causes of business failure.

Between 1996 and 2002, a study of 8872 Spanish SME's was conducted by García-Teruel and Martínez-Solano to assess the effects of working capital management on SME's profitability. This study revealed a correlation between accounts receivables and profitability. This infers that the more receivables a firm has, the less profitable they are. This study is very relatable to the

case of Maryland as it involves firms of a similar form to theirs. It justifies the fact that as cash collection is delayed the firm loses out on possible returns from investments and is not liquid enough to settle current operating expenses.

The cases provided above give this paper a foundation to understanding similar cases as Maryland in that they are all considered small firms. Also, all cases cite instances of firms dealing with poor cash management. Following recommendations made by each of these researchers to the firms, the next section proposes a solution to the problem of poor cash management in Maryland.

### **3.9 PROPOSED SOLUTION**

Following findings from both the needs assessment and the literature review, it is clear that Maryland has to incorporate some structure to their cash management practices to reduce the incidence of cash shortages in their school. Addressing the issue of cash shortages to late cash collections, Maryland needs a means of speeding up cash collection. This could be done by incentivising the parents to make prompt payments and also by granting them easy yet monitored access to the funds lying in the bank. With concern to the idle funds in the bank, Maryland has to find a way of investing the cash to reap returns. Thus, they need an investment tool to guide them as to when to do so.

## **CHAPTER 4: SOLUTION**

### **4.1. CHAPTER OVERVIEW**

This chapter examines the solutions that have been developed based on an analysis of the current cash management situation of Maryland as well as literature reviews. This solution addresses the two aspects of cash management Maryland is struggling with- cash collection and investments.

### **4.2 SOLUTION OVERVIEW**

Considering the late payment of fees by some parents causing the school to experience more cash shortages than surpluses, Maryland would have to put measures in place to speed up collection. Thus, such measures include:

1. Cash discounts- granting of cash discounts in Maryland would induce parents to make quick payments in order to enjoy the concession.
2. Change of payment schedules- shifting from daily payments to weekly payments to ensure effectiveness of discounts
3. Additional fees- much like the current plan adopted by Ashesi University College, this strategy sets late payers or debtors on a plan where they are made to pay an additional percentage for each week payment is delayed.

In addressing the issue of idle cash, the following solutions are proposed.

1. A cash management tool- this tool, based on the maximum and minimum cash balances set by the school guides them to knowing when and how much money to hold at each point in time. This tool greatly addresses the occurrence of cash shortages in the school. This tool is built in Excel considering the technological competence of the school.



2. Investment analysis- this gives the school an overview of possible instruments to invest their money in.

### **4.3 CASH DISCOUNTS**

A cash discount may be defined as an allowance granted by a seller to a buyer to encourage the buyer to make quick settlement. It is usually granted to buyers who make quick payments. Cash discounts have proved to push clients to speed up payments due to their desire to enjoy a reduction in payments. Beyond prompter payments, it attracts loyalty as clients would want to keep enjoying the benefits of a discount. Considering the size of Maryland as well as the fees in question, the discounts granted to the parents cannot exceed 10%. Granting discounts on a daily basis would do no justice to the matter as revealed by the Harvard Business Review, granting discounts on larger quantities have a tendency to move more clients than for small quantities (Mohammed, 2011).

In this light, the application of discounts to the daily fee payments would be less attractive. When the fee payments are lumped to a week, month or term. The effects of the discounts would be greater as parents would see the greater impact. Considering the size of the school they cannot afford to offer large discounts which would significantly reduce revenues it could have potentially gained. Thus, the discount percentage would be set at 10% taking into consideration the inflation rate of the country, 10.6% (Trading Economics, 2016). Thus, at the actual payment date, the value of the money paid would have risen to what is required. These discounts would however be only offered to parents who pay way ahead of time.

#### **4.4 PAYMENT SCHEDULES**

On the premise of how discounts work, it is advisable that rather than collecting payment daily, payments be lumped. Thus, collection of feeding fees would be more convenient if paid termly, monthly and weekly. Considering the financial flexibility of the parents, making payments on a weekly basis would be the most convenient plan. This would benefit teachers as well because of the reduced workload from recording payments on a daily basis. Currently, since cash receipts are on a daily basis, the school is compelled to make daily purchases however switching to a weekly payment schedule allows them to enjoy discounts on bulk purchases.

Tables 1.3, 1.4 and 1.5 show a revised method of feeding fee record keeping with hypothetical names.

<b>WEEK 7</b>		
<b>Name</b>	<b>Amount Paid</b>	<b>Balance</b>
Heidi Abban	10	-
Asantewaa Abrokwa	10	-
Yaa Asante	10	-
Efua Baiden	-	10
Emily Botwe	6	4
Dorothy Entsiful	10	-
John Engmann	4	6
Michelle Kennedy	-	10
Abraham Mensah	2	8
Esther Nortey	14	-
Josiah Smith	20	-
Jeshurun Smith	20	-

**Table 1.3 Records for timely payments**

<b>DEBTORS RECORD</b>	
<b>WEEK 7</b>	
<b>Name</b>	<b>Balance</b>
Efua Baiden	10

Emily Botwe	4
John Engmann	6
Michelle Kennedy	10
Abraham Mensah	8

**Table 1.4 Records for debtors**

<b>CREDITORS RECORD</b>	
<b>WEEK 7</b>	
<b>Name</b>	<b>Amount</b>
Esther Nortey	4
Josiah Smith	10
Jeshurun Smith	10

**Table 1.5 Records for creditors**

#### **4.4 ADDITIONAL FEES**

In addition, a way to prevent the loss of significant returns through discounts would be by setting a higher percentage for credit purchases. In this instance, for each late payment, parents would be required to pay an additional percentage. For example, if a parent pays a week late, he would be required to pay an additional payment of 5%. This follows the current payment plan system adopted by Ashesi University College. With this system, for each delay in payment, charges rise. The knowledge of such a system would cause parents to want to pay early or if not, right on time to prevent incurring extra costs.

#### **4.5 FOLLOW-UP METHOD**

Being consistent when pursuing debtors helps to recover debts while maintaining good customer relationships. Following up on debtors is necessary to remind some who may have forgotten to settle their obligations. This is most effective when a good relationship has been established between the two parties. Thus, it is necessary that a great relationship is established between the

school and its parents to make it easier to communicate with them. The school may continue using the news letters and phone calls to remind debtors of their settlements but by establishing a good relationship with them it will be easier to recover payments. Initially, teachers can begin the follow up process by reminding their students to make payments. Then, if the delay continues, the administration would then make use of the news letters to remind the parents.

#### **4.6 INVESTMENT ANALYSIS**

Considering the low risk tolerance of Maryland, it is advisable that they invest in safe and moderate risk assets. What this means however is they would in turn receive lower returns than if they had invested in more risky assets. Possible assets they could look at investing in are commercial papers, certificates of deposits, treasury securities, savings bonds and preferred stock.

The school should also consider diversifying their investments. Diversification refers to a risk management practice where investments are allocated among various financial instruments; a portfolio of assets. The rationale behind diversification is that a portfolio with different types of instruments often yield higher returns and pose a lower risk. The catch however is that the instruments have little to no correlation. It is worthy to note that although most professionals may agree that diversification has proved to be the most effective way of handling risks they are some risks that cannot be avoided. These are risks inherent in the market that affect every company. Such include exchange rates and inflation rates.

Maryland has a good chance of diversifying their instruments due to their needs invest in both long-term and short-term instruments since they have different cash flows. Taking into

consideration their risk tolerance, they should consider investing in treasury bills due to the ease of liquidity and minimal transaction costs they bring. Other securities they could invest in are commercial papers and mutual funds. For the purpose of calculations in this paper however, it is assumed that the school will invest in the 91-day treasury bill since they are risk free. Thus, real interest rates are 13.3643% and transaction costs are GHS 1.

#### **4.7 CASH MANAGEMENT MODEL**

In deciding the cash management model to employ, the three widely used models were compared; Baumol, Miller-Orr and Stone. Analysis was done on the basis of their effectiveness in past cases as well as bringing it to the situation of Maryland. At this point, it is worthy to note that there are two different cash flows being addressed; school fees and feeding fees. Thus, for each cash flow, an analysis is done and a model is selected. General analysis of the school reveals that Maryland as a school, admits new students at the beginning of each academic year and graduates a class of them at the end of each as well. In addition to that, there is a case where some students leave the school even during the academic year. Thus, the population of the school continues to change.

##### **4.7.1 Feeding Fees- Stone Model**

The change in the population of the school has a greater impact on cash outflows of feeding fees than of tuition fees. As realised during the needs assessment, the money collected for feeding fees is what is primarily used to settle daily operating expenditures such as utility bills and purchase of supplies. Thus, the outflow of cash is rather fast. Knowing this, it is necessary that the school always has a minimum cash balance on hand to cater for them. Nevertheless, as

revealed in the literature review, setting a maximum cash balance is equally important as it prevents the case of having idle cash which could have been invested and earned interest.

Among the cash models, the one that relates the most to the feeding system is the Stone model. The Stone model just like the Miller-Orr model uses a control-limit but in addition, it incorporates a look-ahead forecast which has already been explained. This process is explained in a flowchart included in the appendix (Figure 1.9). Realising that expenses may have to be settled regularly, immediate investment and liquidation which the Miller-Orr model advises would not be the best. Rather, assessing the possibility of immediate cash inflow or outflow days before making such decisions is better. In calculating the amount to be invested or redeemed, a firm needs to set a minimum, optimal and maximum cash balance.

The minimum cash balance is set by management based on a company's expenditure and how often they are to be settled. The risk preference of a company also affects the minimum balance. Considering the low risk tolerance of the school, a minimum cash balance would have to be relatively high. As mentioned, no minimum cash balance has been set by the school already. Thus, in setting one for the school the total expenditures for the past three years were analysed and the average was used as an indicator for the minimum balance. For purposes of confidentiality, the financial statements of the school are not included in this paper but the computed average expenditure per week is GHS 5462.33. This is what is set as their minimum balance.

To calculate the optimal balance and maximum cash balance, the spread between the minimum and maximum balance should be found first. In calculating the spread, the following formula is used

$$Z = \sqrt[3]{\frac{3}{4}} \times \frac{\text{transaction costs} \times \text{variance}}{\text{interest rate}}$$

The optimal balance was then calculated following the formula;

$$Q = \text{lower limit} + \frac{\text{spread}}{3}$$

The maximum balance was found by adding the optimal balance to the spread to the minimum balance.

$$U = \text{lower limit} + Z$$

After calculating the spread between the limits, the amount realised was GHS 398.8049. This figure is relatively low due to the assumption of transaction costs of GHS 1. The optimal balance was hence set at GHS 5595.26 and the maximum balance at GHS 5861.13. Calculations for each of these figures are included in the appendix (Figure 1.10).

In this section, I would use the Stone model to demonstrate the decision to invest or redeem cash under three different scenarios.

<b>DECISION TO INVEST/ REDEEM</b>	
	<b>GHS</b>
Minimum Cash Balance	5462.33
Maximum Cash Balance	5861.1349
Optimal Cash Balance	5595.26497
Current Cash Balance	6000
<b>Amount to invest</b>	<b>404.735033</b>

**Figure 1.4 Scenario 1 for Stone model approach of cash management**

The tool above shows the decision on whether to invest or redeem cash using the Stone model. In this case, the current cash balance exceeds the maximum cash balance. Thus, the difference between the current cash balance and the optimal cash balance is invested to get the cash balance back to the optimal level or return point. At this point however, the school will make a forecast of cash flows to assess whether or not there will be immediate cash outflow or inflow days. If there are cash outflow days coming up, they will not invest the money but hold it to settle their obligations. If there are no such days, the school will proceed to invest the cash.

<b>DECISION TO INVEST/ REDEEM</b>	
	<b>GHS</b>
Minimum Cash Balance	5462.33
Maximum Cash Balance	5861.1349
Optimal Cash Balance	5595.26497
Current Cash Balance	4500
<b>Amount to redeem</b>	<b>1095.26497</b>

**Figure 1.5 Scenario 2 for Stone model approach of cash management**



In contrast, Figure 1.5 shows an instance where the current cash balance falls below the minimum cash balance. This implies the need for cash from investments to be redeemed. If upon projection of cash flows it is realised that there are immediate cash inflow days investments will not be redeemed. If there are no such days, an amount of GHS 1095.27 will be redeemed from investments.

<b>DECISION TO INVEST/ REDEEM</b>	
	<b>GHS</b>
Minimum Cash Balance	5462.33
Maximum Cash Balance	5861.1349
Optimal Cash Balance	5595.26497
Current Cash Balance	5777
<b>Amount to invest/redeem</b>	<b>0</b>

**Figure 1.6 Scenario 3 for Stone model approach of cash management**

In the final instance, the current cash balance lies between the upper and lower limits thus, there is no need for investment or liquidation of funds.

#### **4.7.2 Tuition Fees- Baumol Model**

Tuition fees which are paid at the beginning of the term cater for salaries at the end of each month and building projects of the school of the need be. Considering the flow of cash in this instance, the most appropriate model to use is the Baumol model. The assumptions of the model which have been already discussed lead to the model's formula,

$$Q = \sqrt{\frac{2CD}{O}}$$

where;  $Q$  – optimal quantity,  $C$  – cost per transaction,  $D$  – disbursement and  $O$  – opportunity cost of holding cash

According to this model, optimum cash level is reached when holding costs equal transaction costs. Transaction cost covers the costs incurred in converting securities into cash or cash into securities. Such costs include brokerage fees, registration costs and commission. The Baumol model assumes cash disbursements happen steadily. In Maryland’s case this relates to the salaries to be paid to staff at the end of each month and funds used for expansion projects when the need arises. The opportunity cost of holding cash refer to the interest forgone on marketable securities. That is, interest that would have been earned if cash was invested into securities. The opportunity cost of holding cash is represented by the nominal interest rate which is the sum of real interest rate and inflation.

$$\text{nominal interest rate} = \text{real interest rate} + \text{inflation}$$

<b>MINIMUM BALANCE TO BE HELD</b>	
	GHS
Transaction Costs	1
Cash Disbursements	25000
Opportunity Cost of Holding Cash	2.00%
<b>Optimal Cash Balance</b>	<b>5481.303812</b>

**Figure 1.7 Baumol model approach to cash management**

The tool using the Baumol Model is displayed above; once Maryland inputs all the components, the optimal cash to be invested would be calculated for them. From the example above cash disbursement was set at GHS 25000 and opportunity cost was 2% (23.98%/12). Transaction costs were set at GHS 1 since it was assumed that they invested in treasury bills. The disbursement figure was derived from an average of salaries paid out per month. Thus, the minimum optimal balance to hold is GHS 5481.31.

#### **4.8 IMPLEMENTATION PLAN**

The implementation plan gives a synopsis of the tools developed, the parties responsible for the implementation, the frequency with which it should be done and the effects of each of them.

<b>TOOL</b>	<b>PARTIES RESPONSIBLE</b>	<b>FREQUENCY</b>	<b>EFFECT</b>
Discounts and Additional Fees	Finance Lead	Weekly	Speeds up cash collection by inducing parents to make early payments
Follow Ups	Administration	Weekly	Ensures that all cash is retrieved from debtors
Cash Management Models	Finance Lead	Monthly	Reduces incidence of cash shortages or idle cash surplus

#### **4.9 ANALYSIS OF SOLUTION**

##### **4.9.1 Benefits**

The benefits of the proposed solution are that Maryland would be able to better manage their cash by ensuring that cash flows are steadier by speeding up collection and also by ensuring that cash is not left idle but rather reaping returns. The change in payment schedule would make the

impact of the discounts and instalment charges more effective. The setting of a minimum and maximum cash balance would at each point help them know the appropriate amount of money to keep in hand to ensure liquidity without completely compromising on profitability.

#### **4.9.2 Limitations**

Although it will prove to more effective, there is a chance that some parents may still make daily payments due to their capacity. Also, the school may put into place almost every measure to ensure that parents pay on time but in the end the ultimatum lies on the parents. Some of these parents may prove difficult and there is only so much the school could do to ensure payments. Also, interest rates are bound to change which may cause the school to constantly revise their security choice.

## **CHAPTER 5: CONCLUSION AND RECOMMENDATIONS**

### **5.1 CONCLUSION**

The problem of cash management is one that has plagued many small enterprises and Maryland is no exception. The existence of these problems suggests the need for effective cash management practices. In this paper, the collection and investment aspects of cash management were addressed for Maryland Montessori Learning Centre. In addressing this issue of late cash payments, the adoption of discounts and a revised payment plan to charge extra fees for late clients were suggested. These would be handled by the finance lead of the school. The administration of the school will also be in charge of following up on debtors to retrieve payments. With regards to investing idle cash, cash models were developed using the Stone model for feeding fees and Baumol model for tuition fees.

### **5.2 LIMITATIONS**

The greatest limitation for this project was the limited access to parents. Thus, there was a very low response rate to questionnaires administered.

### **5.3 RECOMMENDATIONS**

Maryland is admonished to carefully follow and implement the solutions presented to them. As indicated in the implementation plan, the school should ensure to follow up on payments weekly. Also, the optimal balances to be held should be computed in the model search month considering the possibility of interest rates of the securities changing. By implementing all these tools, the school is sure to reduce the incidence of cash shortages greatly as well as reap returns from investments.

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**Appendix**

<ul style="list-style-type: none"> <li>• What system do you currently employ in collecting feeding fee payments?</li> </ul>
<ul style="list-style-type: none"> <li>• How did you arrive at this system?</li> </ul>
<ul style="list-style-type: none"> <li>• Apart from cash payments, are there any other payment methods used by parents to pay for feeding?</li> </ul>
<ul style="list-style-type: none"> <li>• What are your main sources of revenue as a school?</li> </ul>
<ul style="list-style-type: none"> <li>• Which occurs more often: cash surpluses or cash shortages?</li> </ul>
<ul style="list-style-type: none"> <li>• What reasons do they give for paying for services late?</li> </ul>
<ul style="list-style-type: none"> <li>• How do you follow up on students or parents who owe you?</li> </ul>
<ul style="list-style-type: none"> <li>• What have been some of the effects of late cash collections on your day to day business operations?</li> </ul>
<ul style="list-style-type: none"> <li>• If you were to make any changes to your current system, what would it be?</li> </ul>
<ul style="list-style-type: none"> <li>• Will you be willing to invest excess cash from operations in low-risk short term securities to yield returns?</li> </ul>

**Table 1.1 Interview Guide for Finance Lead**

<ul style="list-style-type: none"> <li>• What is money invested for school fees used for?</li> </ul>
<ul style="list-style-type: none"> <li>• How satisfied are you with your current cash collection?</li> </ul>
<ul style="list-style-type: none"> <li>• Will you be willing to invest excess cash from operations in securities to yield returns?</li> </ul>

**Table 1.2 Interview Guide For Proprietress**

<b>EVALUATION OF FEEDING FEE COLLECTION SYSTEM</b>	
<p>The aim of this survey is to analyze the current cash collection system of feeding fees at Maryland Montessori Learning Centre as basis to devise a new and improved system. Your participation as parents of Maryland is essential to developing implementable collection strategies. All responses are voluntary, confidential and will be very much appreciated.</p>	
1.	What mode of payment is more convenient for you? (i.e. cash or bank deposits)
2.	How often would you like to make feeding fee payments?
	<input type="radio"/> Termly <input type="radio"/> Monthly <input type="radio"/> Weekly <input type="radio"/> Daily <input type="radio"/> Other .....
3.	What are some possible reasons that could result in you making late payments?
4.	If you were to enjoy a discount for early payment, would you be incentivized to make early payment?
	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Maybe

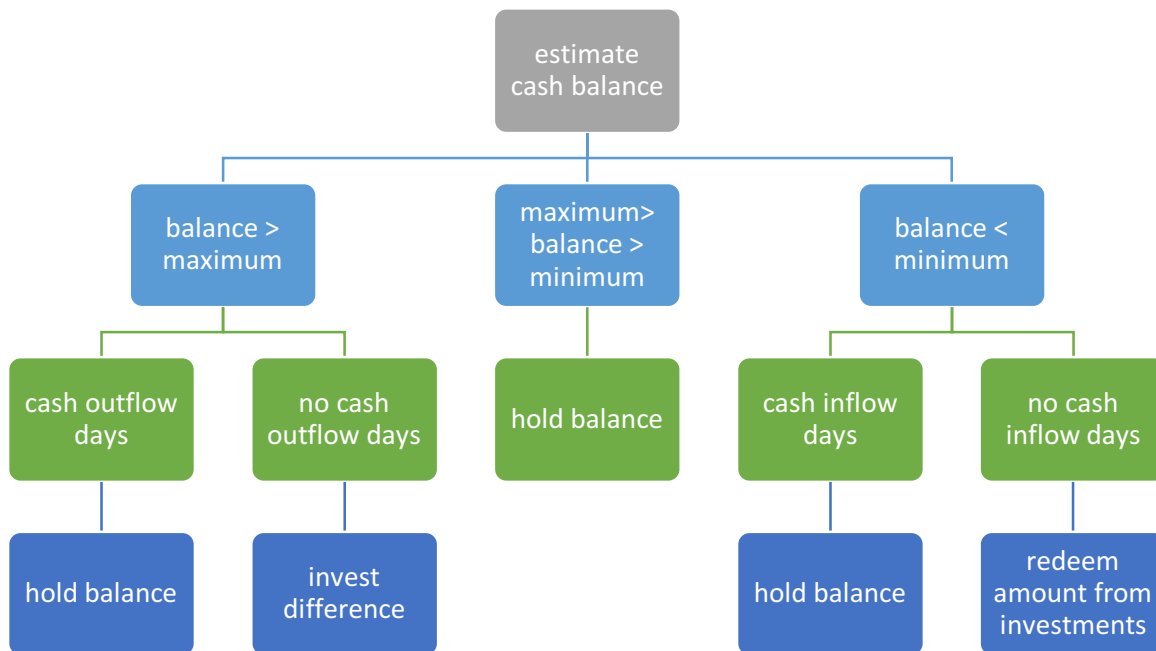
5. How would you like to be prompted if you have payments due? (i.e. e-mail alerts, phone calls, newsletters.)

**Table 1.6 Questionnaire guide for parents**

**Monday 16th April, 2018 To Friday 20th April, 2018**

Period	Discount Rates	Interest Rates
91 - Day	12.9322%	13.3643%
182 - Day	12.9727%	13.8726%
1 - Yr Note	-%	15.0000%
7 - Yr FXR Bond	-%	16.2500%

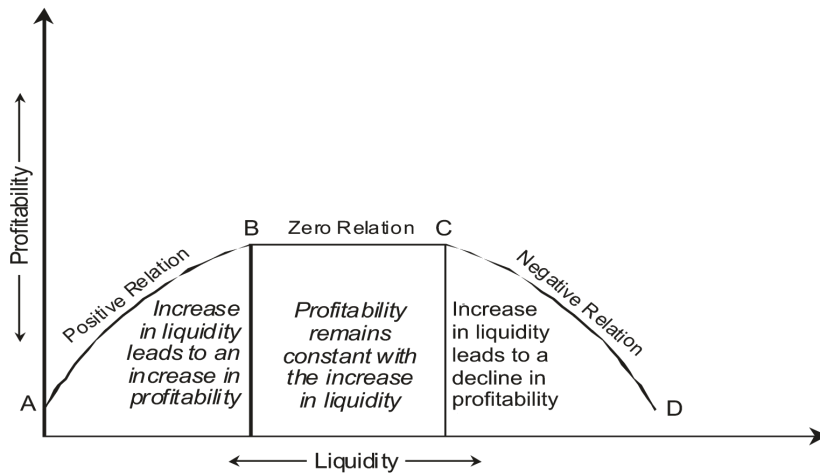
**Figure 1.8 Treasury bill rates**



**Figure 1.9 Flowchart describing decision making under the Stone model**

CALCULATION FOR STONE MODEL			
Transaction Costs		1	
Variance		389025.389	
Weekly Interest Rate		0.46%	
Lower Limit		5462.33	
Spread between limits		<b>398.8049</b>	
Optimal Balance		5595.26497	lower limit+ (spread/3)
Upper limit		5861.1349	lower limit + spread

**Figure 1.10** Calculation for components of Stone model



**Figure 1.11** Relationship between liquidity and profitability