MOBILE MONEY TECHNOLOGY AND SPENDING BEHAVIOUR
OF STUDENTS OF THE UNIVERSITY OF GHANA

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DECLARATION

This is to certify that this thesis is the result of research undertaken by Georgina Maku Cobla towards the award of the Master of Philosophy (M. Phil.) degree in Economics in the Department of Economics, University of Ghana. I hereby declare that with the exception of references made to other peoples’ works, which have been duly acknowledged, this thesis is entirely my own work, done under the guidance of my supervisors and neither part nor whole of it has been presented for another degree anywhere.

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DEDICATION

I dedicate this work to God, the entire Cobla family, Reverend Eric Dadzie, Dr. Frannie Léautier, my loved ones and friends, lecturers and colleagues who have encouraged and supported me in diverse ways throughout my academic life.
ABSTRACT

Over centuries, various technologies have been introduced to developing nations, which have aided the growth of business and made lives of individuals more comfortable. Yet, none of these technologies have had as much influence on individual consumers in developing economies as the mobile phone technology.

Students are one group of people who find the mobile phone technology useful in accessing information (given its internet adaptability features). Again, students’ access to information makes it easier for them to use the technology and its various applications. Resultantly, mobile money technology is largely used among them. To the extent that the mobile money technology facilitates access to funds at any point in time, it has the potency of influencing the spending behaviour of its users.

This paper investigates how the use of the mobile money technology (a mobile phone based application) among students affects their spending behaviour. A total of 506 students from the University of Ghana were sampled for the study. Ordinary least squares (OLS) regression was used to estimate the results.

Among findings from the study, active use of the mobile money service (technology) has significant influence on students’ spending behaviour. On a monthly basis, students who use mobile money spend nearly 19 Ghana Cedis more than those colleagues of theirs who do not use mobile money. Students who use both mobile money and ATMs jointly spend nearly 14 Ghana Cedis more than those their colleagues who do not use who technologies jointly.
Again, behavioral factors such as health condition of students, their cognitive capabilities and social status were also found to be key influences on their spending behaviour.

Per the findings from the study, it is recommended that, technological growth should not be curtailed given the numerous benefits technology accrues to society, yet, students must be cautious in their use of technology so as to maximize the positive influences (such as increases in productivity) and minimize the negative influences (such as indiscriminate spending) that using technology can impact on human behaviour.

It is also recommended that, mobile money operating companies give more attention to enticing the Ghanaian populace to use the mobile money technology (service) than they give to improving access to it, as it is by this means that it can most easily financially include the unbanked.

At Macroeconomic level, electronic (money) credit generated by the mobile money technology should not be overlooked by policy makers when making monetary policies as it also influences individual users’ consumption spending. Policy makers need to strategize on how to manage economic shocks that could emanate from the use of the technology.
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LIST OF ABBREVIATIONS

ATM  Automated Teller Machines
CBO  Congregational Budget Office
CGAP Consultative Group to Assist the Poor
GSMA Groupe Speciale Mobile Association
IMF  International Monetary Fund
MTN  Mobile Telecom Network
NCA  National Communication Authority
P2P  Person to Person
PIN  Personal Identification Number
TAM  Technology Acceptance Model
TRA  Theory of Reasoned Action
CHAPTER ONE
INTRODUCTION

1.1 Background of the Study
Technology may alter lifestyles and behaviours in one way or the other as they make work simpler, lives more comfortable, influence savings of those who want to purchase them as well as increase productivity, income and spending (Maurer, 2012).

Though various technologies have been introduced over centuries, one technology that has revolutionized the world and has in particular penetrated the lifestyles of consumers is the mobile phone technology (Jack and Suri, 2010).

Undoubtedly, a number of reasons exist for this easy penetration of mobile phone. One remarkable reason remains that, mobile phone technology followed other technologies that may have paved way for it. With the exception of radio, other technologies that have been introduced over time were relatively slow to diffuse through the population. Yet, the speed with which the technology of mobile phones was adopted, especially in the developing world, remains unprecedented (Jack and Suri, 2010).

Today, in most parts of the world, mobile banking is available due to the existence of mobile phones and its internet adaptability features. Mobile money systems consist of electronic money accounts that can be accessed via mobile telephones. Per a 2012 GSMA survey report, 150 live mobile money services existed worldwide with 56% of them in sub-Saharan Africa. There were about 30 million active users of mobile money services
globally. GSMA (2012) again reports that 56.9 million people have opened mobile money accounts in Sub-Saharan Africa.

Although a basic mobile money system pays no interest on savings or provides loans, it is often likened to simple bank accounts (Demombynes and Thegeya, 2012) because it allows deposits, transfers and withdrawals to be made. Globally, the proportion of mobile network service providers who offer the service varies from country to country. In Kenya, each of the mobile service providers currently has a mobile money service (Demombynes and Thegeya, 2012), but only three out of the six telecom companies offer the service in Ghana.

Until recently, access to basic banking services was very low in Sub-Saharan Africa (16% of the adult population) compared to other developing regions on the globe (28% of the adult population) (Demirguc-Kunt and Klapper, 2012). Different works done by Chaia et al. (2009) and Kendall et al. (2010) using data over varying time periods realized similar results: only about 20% of Sub-Saharan Africa have access to banking services. The main reason was inaccessibility to banks especially by the rural community. Inaccessibility to banks makes it more difficult to save and build up capital to invest, start a business or guard against unforeseen contingencies. Fortunately, with the help of mobile banking and payment technology, statistics are becoming increasingly impressive. Mobile money has increased access to financial services in the Sub-Saharan region by about 16% (Demirguc-Kunt and Klapper, 2012). It has also financially included the young and poor in developing countries (Demombynes and Thegeya, 2012).
1.2 Problem Statement

The importance of technology to development of societies cannot be overlooked. Yet, technology on its own cannot influence human societies and bring about the needed developmental changes (Roberts, 1998). Human response (behaviour) to technology is one indispensable medium by which the impact of technology is transmitted into the development of human society. The importance of behaviour to development explains why the 2013 World Development Report encourages behaviour change. The world development report released in 2015 also emphasizes that, knowledge about how people make decisions and behave is imperative in developing new and creative interventions that help households to save more, firms to increase productivity, communities to reduce the prevalence of diseases, parents to improve cognitive development in children, and consumers to save energy.

Much work has been done worldwide on technology and its adoption for non-economic and economic activities (Igbaria at al, 1995; Shih, 2004; Vijayasarathy, 2004; and Ha Sejin and Stoel, 2009). In developing countries like Ghana, the adoption rate of mobile phones is high and it is estimated that, there are more owners of mobile telephones than there are of bank accounts (Porteous, 2006; Comninos et al. 2008). As a result the mobile money technology has been introduced and adopted in a number of countries including Kenya, Sudan, South Africa, Ghana, and some Latin American and Middle East countries. Yet very little is known about behavioral responses of users toward the mobile money technology.

Though Donner and Tellez (2008) find that most businesses do not accept credit cards for payment of goods and services, and that, the “cash-and-carry system” is largely upheld in
developing countries, mobile money is readily accepted as means of payment for goods and services including taxi fares, particularly, in Kenya (Jack and Suri, 2010). Hirschman (1979) finds that, ready acceptance of credit cards by retail shops influences spending of its users. Hayhoe et al. (1999) also find that credit card holding induces spending among students. To some degree, the mobile money technology may have the potential of altering consumer spending of its users. This is because, it allows easy transferability of money and at any point in time, electronic (mobile) money is highly liquid (Mbiti and Weil, 2011). To the extent that mobile money transfers adds to recipient’s income and reduces sender’s income, it cannot be denied that it also can influence spending behaviour of users.

Inasmuch as recent works and reports on mobile money technology, its adoption, success and potential in harnessing development have given much insight into the factors that have facilitated the fruitfulness of mobile money technology in Kenya relative to other developing countries where mobile money technology is available (Demombynes and Thegeya, 2012; IMF, 2012; CGAP 2011; Gikunju, 2009; Aker and Wilson 2013; Sheikh Ali, 2013), there remains a huge gap in the literature on post-adoption behavioral responses of users of the technology. Knowledge about the influence that mobile money has on peoples’ spending behaviour remains very minimal. To add to existing literature and knowledge, this study seeks to determine whether or not the adoption and use of mobile money influences the spending behaviour of student users since their adoption of the mobile money technology is relatively high.
1.3 Research Questions

This study is motivated by the questions:

- Does proximity to mobile money agents influence the spending behaviour of students?
- Does active use of mobile money technology influence the spending behaviour of students?
- What are the other factors that influence students’ spending behaviour?
- Does the use of mobile money substitute or complement the use of automated teller machines (ATMs)?

1.4 General Objective of the Study

- The overall objective of this study is to determine the influence mobile money technology has on the spending behaviour of its users, particularly among students.

More specifically, the study seeks to investigate:

- Whether or not proximity to mobile money agents influences the spending behaviour of students.
- Whether or not the active use of mobile money technology influences the spending behaviour of students.
- Whether the uptake and use of mobile money by students complements or substitutes for automated teller machines (ATMs).
1.6 Research Hypothesis

- Null hypothesis: mobile money technology has no influence on students spending behaviour.
- Alternate hypothesis: mobile money technology has influence on students spending behaviour.

1.7 Justification

Perceived usefulness and perceived ease of use are the main factors that influence the adoption of a given technology (Davis, 1989). It cannot be denied that, it is through information and education about a technology that its usefulness and ease of use are perceived. Per the works done by Jack and Suri (2010) and Hanudin (2007), it can be argued that among a given population, students are one group that easily adopt technologies of computer, mobile phones and their related services. This is not surprising because students perceive the usefulness of such technologies in accessing information. In addition to this, students’ access to information further makes it easy to use these technologies.

To the extent that mobile money technology is largely used by students and to the degree that it facilitates access to finance at any point in time, its use among students could exert some influence on their behaviours. Yet, no concrete conclusions can be made in this respect until it has been empirically proven.

Additionally, the result could be useful in explaining the spending behaviours of students who have and do not have constant access to cash. It would go a step further in helping
diagnose some psychological and social obstacles that impede the positive transformations technology brings.

More so, the study would fill the existing knowledge gap in literature with regards to how technology impacts on users’ behaviour. Thus, an investigation into the influence of mobile money technology on students’ spending behaviour is worth undertaking.

1.9 Organization of the Study

Chapter one comprises of a brief general introduction to the study, the problem statement, the objectives and justification of the study.

Chapter two is composed of reviews of theoretical and empirical works that are significant to the study. Theoretical frameworks underpinning the study are highlighted and adequately discussed in this chapter.

Chapter three gives a more detailed explanation of the research process and the methods employed in collecting and analyzing data. The models, estimation technique and data used in the study are contained in this chapter.

Chapter four is where results of the study are analyzed. Results of the study are presented and discussed in this chapter of the work.

Chapter five concludes the study and recommends policies based on the outcome of the work.
CHAPTER TWO
OVERVIEW OF MOBILE MONEY IN GHANA

2.0 Introduction

This chapter gives a general overview of mobile money in Ghana. It begins with the spring-up of mobile telecommunication companies in Ghana and the evolvement of their services. It goes further to look at the contributions of the telecom companies to the financial system through their mobile payment systems.

2.1 The Evolution of Mobile Telecommunication in Ghana

Since mobile telecommunication took off in Ghana in the 1990s, it has drastically evolved. This is attributable to the privatization of the State-owned mobile telecommunication company, Ghana Telecom (providers of Onetouch mobile service) as well as private sector involvement in the industry. When mobile telecommunication was first introduced in Ghana, only the very rich could afford, but today, Ghana’s mobile voice subscription base is about 31,154,420 (NCA, 2015).

MTN (then spacefon-areeba) currently has 14,207,778 of these subscribers; representing a market share of 45.60% of the total mobile telecom market. Vodafone (previously Onetouch) also has 7,159,566 subscribers; implying 22.98% of the telecom market holding. Tigo which was the first to take grounds in Ghana as Mobitel now has about 4,264,078 subscription base typifying 13.85% of the entire market for mobile telecom. Airtel (initially known as Zain) has 3,863,252 subscribers presently. This is about 12.40% of the mobile telecom market in Ghana. Expresso, formally known as Kasapa, has a subscription base
of 126,202 persons representing 0.41% of the entire market. Globacom, otherwise referred to as Glo, is the most recent invader of the Ghanaian mobile telecom market. Yet, it seems to have outdone Expresso which has existed before its invasion. Glo currently has 1,481,903 subscribers indicating about 4.58% of the total market share (NCA, 2015).

Since its emergence as leader in the mobile telecom market in 2000, MTN has been keen in maintaining its rank. Vodafone, however, took up Tigo’s place as the second largest mobile telecom market share holder in 2011 and still retains its triumph in that regard. Airtel still manages to rank next after Tigo followed by Glo mobile and lastly Expresso.

### 2.2 Mobile Money in Ghana

Inasmuch as there are six mobile telecom companies in operation in Ghana currently, only three of them provide mobile money services to customers. These three are MTN, Tigo and Airtel. Together, they hold about 72% shares of the total market for mobile telecom. Zain ZAP was introduced in just a year after MTN started providing mobile money services in 2009. Airtel which bought Zain off-the-shelf rebranded ZAP mobile money service as Airtel money. Till date, there is no dominant mobile money service provider despite MTN’s large voice subscription market base. Mobile money remains relatively new in Ghana and mobile telecommunication companies have much to do if the service is to be assimilated well.

In Ghana, it has been relatively easy for subscribers to hold of mobile money accounts. And for this reason, it has been successful relative to the e-zwich introduced by the Bank of Ghana for branchless banking. All a customer needs in order to own a mobile money
account is a registered cell phone SIM card of the mobile network operator offering the 
service and then register for a mobile money account. The customer can then make cash 
deposits at any of the offices of the operator’s mobile money agents or partner banks. These 
cash deposits create electronic money credit in the customer’s account.

Mobile money account holders can make transfers of cash and airtime credit to the accounts 
of other mobile money users on the same network. It is also possible for them to make cash 
transfers to non-account holders or customers on other networks. In this case all that is 
required to access funds is a token number and a PIN from the sender. Non-account holders 
can similarly transfer money to account holders by depositing it for free in the latter’s 
accounts whereas they can transfer money to other non-account holders at a fee. Account 
holders can also use their mobile money credit to pay bills and buy phone airtime. 
Withdrawals can be made at the offices of the network’s mobile money agents or partner 
banks.

The simplicity associated with registering for and maintaining a mobile money account 
coupled with the variety of services one can enjoy under the mobile money service, could 
make it an imperfect substitute to banking services in the view of non-banked savers and 
business persons.

### 2.2.1 MTN Mobile Money

MTN has the largest market share in voice subscription in the Ghanaian mobile telecom 
market and was the first to launch mobile money in Ghana in the third quarter of 2009. It 
had about 5,389 mobile money merchants of the Ghanaian market. About 15% – 20% of
these agents were active with low activity across the agent network. Liquidity of the agent network is weak to moderate. A large proportion of their customer transactions is done by their customer service centres and the partner banks.

MTN currently has a voice subscriber base of about 14.2 million (45%) of the mobile telecom market in Ghana, but had about 238,000 (based on a 90 day metric) mobile money subscribers representing about 2.1% its subscriber base the end of 2013. With voice subscriber base and its dominance in the market; one would have expected MTN to be performing much better in mobile money as well. Yet, in about six years since the launch of mobile money, the company is yet to find the right approach to improve customer uptake in mobile money and to take dominion of the mobile money market.

At a closer look at MTN’s activities on the mobile money market, it seems to have a broad approach to the business; targeting both the banked and the unbanked. MTN mobile money has a broad product portfolio which includes airtime, P2P and bill payment. The average monthly commission earnings of MTN mobile money agent (merchant) at the end of 2013 was about GH¢35. This could perhaps explain the low activity level across their agent network.

### 2.2.2 Airtel Money

Airtel was the second mobile telecommunication company to launch mobile money in Ghana. It entered the Ghanaian market in 2010 and launched the Airtel mobile money that very year in the second quarter of 2010. Airtel had an agent base of 1,575 as at the end of 2013 in the market. About 10% - 15% of these are active with low activity across the agent network. Liquidity of the Airtel money agent network is current weak.
Airtel, being the fourth largest mobile telecom company in Ghana, presently has a voice subscriber base of about 3.8 million, representing 12.40% market share. In terms of Airtel money, the company recorded an active Airtel money subscriber base of about 90,000 (based on a 90 day metric) which represents about 2.6% penetration of its voice subscriber base. Airtel money has also been in operations for about five years and is also yet to make an impressive mark on the mobile money market.

Airtel money activities in the market initially appeared to focus primarily on the high earned customer; the banked. But in recent times, as part of its activities to broaden its market base, it is giving relatively much attention to the unbanked than before. The company’s product mainly includes: general payments, transfers and airtime purchases. Their agent base recorded an average monthly commission of about GH₵20 for 2013.

2.2.3 Tigo Cash

Millicom Ghana launched its mobile money service in the second quarter of 2011. Tigo Cash, as it is generally known, is the third mobile money service to penetrate the Ghanaian market. Tigo cash had an active agent base of 949 as at the end of 2013. The company however went through several phases to arrive at this number of agents. In 2012, it had over 3000 agent network across Ghana, but most of those agents were inactive. After re-evaluation and rationalization of its agents, their numbers shrunk to about 949 by the end of 2013. This process eliminated all inactive agents from their systems. Consequently, Tigo cash agents have a high activity level relative to those of MTN and Airtel. Tigo Cash agents are moderately liquid.
Tigo has a voice subscriber base of about 4.2 million. It is the third largest mobile telecom company in Ghana after MTN and Vodafone. Tigo has a market share of 13.85%. Tigo Cash had an active subscriber base of 285,000 (based on a 60 day metric) representing 7.8% penetration of its subscriber base. Similarly, Tigo Cash is yet to standout on the Ghanaian mobile money market.

Tigo Cash happens to be targeting the unbanked. Their product is basically P2P. Their activities and incentives for Tigo cash users aim at enticing their customers to use the wallet more in transferring funds to each other. The average monthly commission earnings of Tigo cash agents at the end of 2013 was GH₵185. This goes to buttress the relatively high activity level of the agent network.

To this very day, the growth of the mobile money market in Ghana is quite slow. At the end of 2013, the Ghana market penetration was about 2.4%; indicating approximately 610,000 active customers. None of the mobile telecom companies on the mobile money market in Ghana dominates.

The high level of urbanization in Ghana (51%) has made it relatively uneasy for mobile money operating companies to penetrate and increase their customer base adequately (CGAP, 2011). As such, it is advisable for operating companies to build agents network well enough to properly serve their customers and to induce uptake among Ghanaians.
CHAPTER THREE
LITERATURE REVIEW

3.0 Introduction

This chapter looks closely into and analyses those theoretical literatures that underpin the study. These theories serve as guide to the choice of appropriate method and variables to be employed in assessing the spending pattern of students. Closely related empirical works are also reviewed.

3.1 Theoretical Review of Literature

This study is founded on technology adoption theories spearheaded by Davis’ (1989) Technology Acceptance Model (TAM) and consumption theories that influence people spending and saving behaviors. In what follows, the two broad theories are discussed.

3.1.1 Technology Adoption Theory

The TAM posits that perceived usefulness and perceived ease of use are the main factors that influence one’s decision to accept and use a given technology. It originates from the Theory of Reasoned Action (TRA) developed by Fishbein and Ajzen (1975). Yet, it differs from it in two ways. First and foremost, the TAM does not include subjective norms in determining human behaviour in response to accepting and using an innovative technology. Secondly, the TAM uses two constructs to explain human behavioural responses to accepting and using a given innovative technology: perceived usefulness and perceived ease of use.

Perceived usefulness is the belief that a given technology can ameliorate once performance. The implication of this construct is that, people have a more positive behavioural response
towards accepting a technology that is believed to be useful in increasing their performance or productivity for any given task.

Again, perceive ease of use is the belief that using a given innovative technology would be free of effort. This construct also means that human behavioural response would be in favour of technologies which are easier to use or which one can use effortlessly.

Theory of Reasoned Action proposes that a human behavioural response is determined by the intention to behave in a said manner and this intention is, subsequently, dependent on one’s attitude toward the behavior and one’s subjective norm. To Fishbein and Ajzen (1975), intention best predicts human behaviour. Intention is explained as the cognitive symbolism one’s preparedness to behave in a said manner. Per the TRA, three factors determine one’s intention: attitude toward the specific behavior, subjective norms and perceived behavioral control.

Per the TRA, what actually determines the use of an innovation is the human intention to use it. Fishbein and Ajzen’s (1975) theory was formidably useful in consumer behaviour, yet, it had limitations for which the development of extended theories was necessary.

As part of its limitations, attitudes and norms which determine human behavioural response are not easily distinguishable; attitudes can sometimes be viewed as norms and vice versa. Additionally, it assumes that when someone forms an intention to act, they will be free to act without limitation. This, however, is not valid. Finally, in practice, one can be restrained by limited time, ability, environmental or organizational limits among others that can inhibit the freedom to act. Consequently, extended theories were needed to give better explanations to human behavioural responses to accepting and using an innovation.
Davies’ (1989) TAM explains why innovations that relate to information technology are widely accepted and used by students. Such technologies are perceived as useful for deriving needed information quickly. Again, relatively, students have access to information that makes them use such innovations quite effortlessly.

Additionally, unlike the TRA, TAM acknowledges the potency of external forces to affect the intention to use and the actual usage of a technology.

Whereas perceived ease of use and perceived usefulness of an innovation influence its acceptance and use, they are also incentives for continuous usage of the technology. The introduction of a new technology may change the way humans do things. Continuous use of the technology, in effect accustoms them to doing things in a particular way. Consequently, the introduction of the new technology does not only change their way of doing things; it also changes their behavioral responses to certain actions and certain circumstances (Simonson and Maushak, 1996).

3.1.2 Theories of Consumption

Though theories of consumption vary one from another slightly, they all do not rule out income as an important determinant of consumer spending (Palley, 2008). The theory of consumption came into the limelight of research in macroeconomics after World War II when consumer spending accounted for about two-thirds of Post-World War II’s GDP and as there was much apprehension among economists that the economy would return to a state of mass unemployment (Palley, 2008).
Ever since Keynes’ macroeconomic framework in The General Theory was published in 1936, relation between aggregate consumption or aggregate savings and aggregate income, generally termed the consumption function, has occupied a major role in economic thinking (Friedman, 2008). The "fundamental psychological rule” of any modern community, as Keynes termed it, posits that, when real income increases, consumption will not increase by an equal absolute amount, and that, a greater portion of the increase in income is saved (Boulding, 1945). Keynes’ "fundamental psychological rule” implies that, though consumption is positively related to income, the proportion of income consumed diminishes as income increases. This consumption analysis centered on a simple, but realistic equation in the form:

\[ C = a + bY \]

Per the above equation, Keynes proposed that consumption is made up of two segments: an autonomous part which does not depend on the individual’s income \((a)\), and another part which is induced by one’s income at a rate of \(b\). The rate \(b\) at which income induces consumption is what he refers to as marginal propensity to consume (MPC). By this, he made income the only determinant of consumption, where \(C = f(Y)\). However, one may differ on this ground because, if the desire of people to hold money balances for transaction purposes is not influenced only by their incomes, but also the level of interest rate as proven by Tobin (1965) and Baumol (1963), then interest rate can significantly affect consumption since transaction engulfs purchases of goods for consumption as well. What is mind bogging is that, till this day consumption functions employed in teaching even at high educational levels do not inculcate the interest rate in its specification.
Chen (2013) and Cronqvist and Siegel (2010) are among those who argue that social factors such as language and family compositions are significant drivers of saving. The implication of their argument is that, these factors would largely determine consumption.

While on a whole, Keynes’ framework is remarkable, Friedman (2008) argues that Keynes took it for granted that current consumption expenditure is a highly dependable and stable function of current income. This view of Friedman’s is not much surprising because as opposed to Keynes’, he sees consumption to be a fraction of some “permanent” income that is more or less an average level of one’s income stream. With this view that Friedman has, it is quite reasonable to have consumption remaining fairly stable if not constant over periods of one’s lifetime because a constant fraction of a “constant” income will inevitably yield a constant consumption result. On the other hand, Keynes’ consumption ‘result’ may not be fairly constant as it is computed as a stable fraction of a quite “unstable” absolute income.

The Relative Income Hypothesis (Duesenberry, 1949) states that an individual’s attitude to consumption and saving is dictated more by his income in relation to others than by his income or standard of living in isolation. The percentage of income consumed by an individual depends on his percentile position within the income distribution. It is interesting that the theory introduces psychological factors associated with habit formation and social interdependencies based on relative income concerns to challenge Keynes’ construction of consumption behavior because behaviour of rational beings who live in societies are largely influenced by these factors. It further posits that present consumption is not influenced merely by present levels of absolute and relative income, but also, by levels of consumption attained in previous period. This is a logical explanation to Keynes’ idea of
downward stickiness of wages. The theory explains that, it is difficult for a family to reduce a level of consumption once attained. The ratio of consumption to income is assumed to depend on the level of present income relative to past peak income.

Brady and Friedman (1947) provide substantial evidence in support of Duesenberry’s theory. In a couple of studies, Easterlin (1974, 1995) discovers that to a large extent, relative income determines happiness of people in society. Alpizar et al. (2004) further show that relative income does actually matter in “ordinary” people’s consumption decision making. This is very evident in the constant strike actions taken by various labour bodies round the globe at one time or the other when there is a rise in the salary of another labour group which results in widening the income gap between the groups. Moreover, Alpizar et al. (2004) find that contrary to what has been suggested in literature, absolute income is important only in determining the consumption of highly positional goods such as cars and housing.

However, Modigliani and Brumberg’s (1954) lifecycle theory of consumption and Friedman’s (1957) permanent income hypothesis relegated Duesenberry’s theory of consumption to the background (Mason, 2000).

Friedman (1957) insists that permanent income is what determines consumption rather than current, absolute income. By so doing, he distinguishes between permanent and transitory incomes and proposes that current absolute income could comprise of these two forms of income. To him, since transitory income is not reliable, rational beings would take only their permanent income into consideration when deciding on how much to consume. In this way, he proposed a consumption function slightly different from Keynes’ in the form:
\[ C = f(Y_p), \text{ where:} \]

\( Y_p \) denotes permanent income

\( C \) denotes consumption and,

\( f \) denotes the relationship between permanent income and consumption.

By proposing that consumption is a constant fraction of one’s permanent income which can be otherwise known as one’s mean income, Friedman’s work depicts a constant consumption pattern over periods of one’s lifetime. Yet, just as predicted by the life cycle theory (Modigliani and Brumberg, 1954), consumption pattern actually rises throughout one’s lifetime as one transits from singleness to being a married man or woman, to parenthood (with the responsibility for children) and finally to old age (with its healthcare costs). Modigliani’s theory is quite reasonable because saving is not very important as one ages and approaches the end of his or her life. Thus unless for the purpose of bequeath, one is likely to save less and less of his income and consume more of it as one approaches “death”. Thus, Friedman’s hypothesis appear appealing to rational senses, but is very unrealistic. It appeals to rational senses in that, one would consume some constant fraction of his permanent income to maintain a fairly constant standard of living. Yet, it is unrealistic because as one grows and starts a family, his needs and consumption spending also rise. Furthermore, as one advances in age, medical expenses and health needs cause consumption spending to further rise.

The lifecycle theory of consumption (Modigliani and Brumberg, 1954) also proposes that individuals choose a lifetime pattern of consumption that maximizes their lifetime utility subject to their lifetime budget constraint. By introducing utility maximization, Modigliani
and Brumberg merged macroeconomic consumption theory with microeconomic choice theory. Their work emphasizes the importance of future consumption to the individual as it does not take consumption as a one-time activity, but an activity done over a lifetime. Friedman’s theory is quite similar to that of Modigliani and Brumberg’s as they both emphasize the consumer’s desire to smoothen out consumption over a period so as to maintain a certain fairly constant level of consumption.

Whereas Friedman’s employs the varying transitory income to smoothen out consumption over time, Modigliani employs saving of excess income and dissaving of past saving to smoothen out consumption.

What is more, though various consumption theories have their strengths and weaknesses, one would consider the life cycle hypothesis superior to the others simply because in one way or the other, it has the characteristics of being logical and applicable in real life. First of all, it depicts a rising, fairly constant consumption pattern over one’s lifetime. Secondly, it implies that rational beings would try not to reduce their consumption once it is attained, but they do not mind raising it. Next, it posits that consumption rise throughout one lifetime and savings reduce as one’s number of years to live reduces (given the assumption that the individual does not inherit anything from previous generation and would not pass anything on to successive ones).

If the life cycle theory is employed in predicting the consumption and saving pattern of mobile money users, it is more likely that given the same income level, younger users with fewer responsibilities would consume a small part of their incomes and save a greater fraction of them than older ones with more family responsibilities. Aged users are expected to mainly receive and dissave past savings made as they have limited time left to live. It is
therefore expected that aged users would spend more than younger and middle-aged users who may be the source of remittances to these aged users and may also be saving for future use.

Yet, Carroll (1992, 1997) also argues strongly that individuals do not have the patience to wait until retirement to consume their savings and for that reason they only save for precaution motive. This supports Deaton’s (1998) proposition by maintaining the grounds that consumers only save to stock up material wealth only to “buffer up” future low incomes. How much one saves depends largely on the degree of uncertainty surrounding both his permanent and transitory incomes. The two suggest that in anticipation of a bailout from low incomes and consumption in future, saving will be low.

Per Boulding’s (1945) analysis in his paper titled: “The Consumption Concept in Economic Theory”, one can confidently argue that remittance payments within an economy’s boundaries does not result in change in national income because it is merely a transfer of asset and redistribution of income, but one cannot object to the fact that at an individual level, it does affect incomes. Thus, it is worth noting that in this study, though macroeconomic analyses is adopted and further critically examined, it is done mainly within the context of microeconomics.

Undoubtedly, remittances remain a part of income whether or not one considers it transitory or permanent. Such money transfers may be the only source of income to the unemployed whether it comes in the form of unemployment benefits or gifts from friends and relations. Mobile money technology has eased the sending and receiving of remittances within economies. The speed, reliability and reduced stress associated with remitting via mobile money have increased the use of this technology in a number of countries where it
has been introduced (CGAP, 2011; IMF, 2012). Users now send and receive and more money and they do so more frequently with the mobile money service (Morawczynski, 2009). Evidently incomes of mobile money users are affected and there is much likelihood that this also affects their spending.

### 3.2 Empirical Review of Literature

Several studies have been conducted over the years which relate to this work on mobile money and students’ spending. Some of these works which are relevant and relate closely to the study’s objectives are discussed, criticized and analyzed in this section of the study.

#### 3.2.1 Mobile Money’s Influence on Users Lives

Empirically, there are a number of proofs that the mobile money technology has influenced the lives and behaviours of its users in one way or the other. Kimenyi and Ndung’u (2009) assess the expansion of the Kenyan financial services and investigate the lessons that can be learned from mobile phone banking in Kenya. The work reveals that mobile money transfers facilitate payment for services of which labour is no exception. Per the study, prompt payment of weekly labour in remote parts of Kenya has led to a transformation of lives in Kenya, particularly in rural regions. This transformation is said to be in the right direction and suggests that the people of rural areas can now readily afford to pay for their needs on time and can increase their spending on goods and services.

Morawczynski (2009) also examines the adoption, usage and the outcomes of mobile money in Kenya. The study employed the socio-technical systems framework to present
M-PESA as a complex system rather than an isolated application. The work makes it clear that M-PESA helped users to do what they were doing before the technology was introduced. These include money transfers back home and savings. It also reveals that financial practices began to change as M-PESA became integrated into daily life. Users now send money home more often. Users’ saving frequency has also augmented. The work further reports that some users now have more time to work (save travel time to send money home). The study concludes that availability of mobile money agents in rural regions has also influenced the lives of mobile money users positively. To some degree therefore, easy access to funds via mobile money increases spending among mobile money users.

Though the study was enlightening, Morawczynski (2009) could have made good use of regressions to explore the impacts of the technology rather than merely describing survey responses.

Aker and Wilson (2012) investigate whether and how mobile money can promote financial inclusion of the poor, particularly those living in rural areas of northern Ghana. The survey is in two stages: a data collection and a follow-up. It uses four different interventions (each one) designed to partially address some key barriers to mobile money adoption. Per their findings, rural populations are much interested in adopting m-money. In 2 and a half months after the initial intervention, 26 percent more households started to use mobile money with 86 percent of users receiving money transfers via the medium. Moreover, 70 percent of users save on their mobile phones (on the mobile money platform).
High bank charges and minimum bank requirements are obstacles enough to deter the poor and some young ones from opening and maintaining bank accounts Comninos et al (2008). Demombynes and Thegeya (2012) examine the mobile savings phenomenon in Kenya and find that, the mobile technology creates a platform for the young and poor, who could not open, manage and save in formal bank accounts to do so. Data collected over a sample of 6,083 individuals is used. The study employs Filmer and Pritchett (2001) approach to create a wealth index. Probit and OLS are used to arrive at the estimates.

Furthermore, Thulani et al (2014) investigate the level of financial inclusion among Zimbabweans. The study uses both qualitative and quantitative methods to arrive at the results. A sample of 37 households is drawn from eight districts in the Midlands Province. Questionnaires and focus groups discussion are employed to collect the data. Exploratory factor analysis, principal component analysis, Varimax rotation and Kaiser Normalization are conducted. The work depicts very high mobile money usage among the unbanked rural inhabitants for transferring money. Yet, it further reveals high usage of mobile money service does not change their saving habits. They still adhere to their primitive means of saving.

3.2.2 Mobile Money and Other Banking and Money Transfer Technologies and Products

A new technology can either enhance the use of an already existing technology or replace it. It also has some potency of altering behaviours.
In an empirical examination, Gikunju (2009) examines the effect of mobile money on the revenues of other money transfer companies in Kenya. The study employs a more qualitative analysis approach to arrive at the findings. It is revealed that prior to the introduction of the mobile money technology in developing countries, the rich who can afford to pay the high banking charges and the educated who have better understanding of financial transactions were mainly those who patronized banking products and services. They also formed majority of those who used formal money transfer means to send monies across geographical space. Alternatively, the poor and those with low educational levels largely resorted to informal banking options such as the ROSCAs and mostly used the services of family and friends to send money across geographical space. Shortly after the introduction of mobile money (precisely M-PESA) in Kenya in 2007, revenues and profits on local transfer services including Posta Pay money transfer service declined rapidly. Profits on international transfers such as Western Union and MoneyGram profits also declined over the same period. Gikunju (2009) concludes that though overall spending on money transfers (amount transferred) may not have changed; M-PESA has largely substituted other transfer services in Kenya despite the constant price cuts done by other money transfer service providers to resolve the issue. M-PESA may be substitutive to other money transfer services in Kenya, but Jack and Suri (2010), Mbiti and Weil (2011) and King (2012) give empirical evidence that M-PESA in Kenya is rather complementary than substitutive to banking products and services.

In Tanzania, however, the story is different. In a mobile money tracker study undertaken by InterMedia (2012), Tanzanians were found to consider mobile money as incredibly, the
safest, fastest, most convenient, and least expensive way to transfer money. Yet, more Tanzanians send and receive money through friends and family than mobile money. The proportion of Tanzanians who use mobile money as a saving platform increased from 16 to 23 percent (given the result of their previous study), but saving in form of durable assets has also increased. Obviously Tanzanians still hold on to their old mediums of saving and transferring money over space. In Ghana, knowledge about mobile money and its use has increased. With time mobile money operators are developing an ecosystem for the technology. Nonetheless, unlike in Kenya, mobile money has not become a major means of payment for goods and services, or savings. The ‘Cedi’ of the Central bank still remains ‘king’ in various transactions (Dzokoto and Appiah, 2014).

Though Jack and Suri’s findings were consistent with those of other works, their approach and that of InterMedia were more descriptive than analytical. It would have been more appropriate if the former employed ordinary least square (OLS) regression analysis in their attempt to examine the possible economic impacts of mobile money. InterMedia could also have employed a similar approach to determine whether or not the difficulty in moving from awareness of the mobile money technology to the understanding of it was what actually impeded its use in Tanzania. It would have made it possible to test the significance of their results. Yet, findings from the two studies substantiate the need to further investigate whether or not the use of mobile money among students of the University of Ghana substitutes or complements the use of automated teller machines (ATMs).

Furthermore in univariate tests King (2012) compares the average distance to banking services location among sub-samples of formally banked and non-formally banked for
2009 and 2006, and M-Pesa and non M-Pesa users for 2009. He confirms the importance of physical access to banking infrastructure for financial inclusion. He further adds that distance to bank and time it takes one to reach the bank does not influence the likelihood of an individual banking via mobile. This is not odd because besides mobile money, mobile banking is mainly possible only with smartphones, and comes with extra service charges from one’s bankers and the cost of data used in accessing and processing the needed information. Distance alone is not enough to induce people to resort to mobile banking because even mobile money which does not require smart phones to operate and manage comes with service charges and its use may require phones.

3.3 Determinants of Students Spending

Spending among students is determined by various factors. Some of these determinants are reviewed in this section of the study.

3.3.1 (Students’) Spending Behaviour in Response to Actual Access to Finance or a Technology that Facilitates Access to Finance.

It is generally known that access to finance or access to a technology that facilitates access to finance influences spending behaviours. Fortunately, various empirical works exist as confirmation to this.

Among a group of secondary school students, Darling et al (2006) examines the association between part-time employment and spending on fast food, alcohol, cigarettes, and gambling using a sample of 3434 New Zealand (NZ) secondary school students. The study employs 2002 Youth Lifestyle Survey (YLS) data and analyzes with STATA.
Probability weights are assigned at the individual student level and are calculated from the total number of participants sampled in each geographic region relative to the total number of students registered in that region. Estimates of spending in each category during the previous week are summed to calculate the total amount actually spent by the students. Logistic regressions are used to determine the associations between the binary variables for part-time employment and the likelihood of purchasing each of items such as fast food, alcohol, cigarettes and gambling. The results are presented as odds ratios (OR) with 95% confidence intervals (CI). Negative binomial regression are used to examine the association between amount spent and part-time employment, sex, year and school decile because the data are right skewed and clumped at zero.

The study reveals that, though many (79.8%) of those of this group of consumers rely mainly on parents and guardians, about 39.9% of students also report receiving money from part-time employment. Income earnings from part-time employment (besides the disposable income given to them by their parents and guardians) are positively related with the purchase of fast foods, alcohol, cigarettes and gambling. Younger students spend more than older ones, but older students are more likely to gamble with income from part-time employment.

Moreover, there is also empirical evidence that, the possession of a credit card is associated with measurably higher expenditure levels and a greater incidence of in-store purchasing among customers of a northeastern department store chain in the United States (Hirschman, 1979). In a study to examine how consumer purchasing behaviors vary with credit card
systems, Hirschman (1979) uses data from a survey conducted in several branches of a departmental store chain. In collecting data for the work, every fifth customer exiting the shop is administered a structural questionnaire by a professional field service interviewer. The questionnaire deals with purchases made at the store, mode of payment used, attitudes concerning various credit instruments, store patronage, and a detailed set of demographic characteristics. A total of 4049 customers are interviewed in the survey. As a result of the exploratory nature of the research, both bivariate and multivariate statistical analyses are used to test the hypotheses.

Compulsive purchasing and high spending is known to be relatively high among college and university students. Hayhoe et al (1999) determine the differences in spending habits and credit use of college students. Responses from 480 students of 6 state-sponsored universities in the United States are used and estimate coefficients using logistic and OLS regressions. The study reveals students with more than four credit cards are mostly compulsive buyers who have high spending attitudes. It also shows that such students make high demands for money to meet their high current expenditures and pay back high past credits. Compulsive purchasing is known to be relatively high among college and university students.

To investigate the causes, effects and the implications of compulsive buying among students on public policy, Roberts (1998) randomly sample 300 interviewees in Texas and interviews them by telephone. The seven-item clinical screener for compulsive buying developed by Faber and O’Guin (1992) is used to gauge compulsive buying among the
sample under study. About six percent of their sampled college respondents are found to be compulsive buyers (suggesting high average expenditures). This proportion though is the higher limits for their pre-estimated results, is termed as unexpectedly high.

Unlike other works on compulsive purchasing, Roberts’ (1998) goes a step further by controlling for some behavioural influencing factors such as family income and self-esteem that may influence the spending behaviours of the students understudied. By so doing, the reliability of the results are enhanced to some degree. While Hayhoe et al (1999) find the number of credit cards owned to be a significant determinant of student spending behaviour, Roberts (1998) finds the use of credit cards as the most important influencer of students purchasing behaviour. Moreover, the results from the study by Darling et al. (2006) are also very enlightening. Yet, using data on spending pattern in the week prior to survey alone may not reflect actual spending pattern of students. Resultantly, outcomes could be misleading. It would be more appropriate if average weekly spending pattern are used. Though response to the average weekly spending pattern may not give vivid expenditure details, it would give good estimates of the expenditures students normally make in a week and help in realizing more reliable outcomes and conclusions.

Results from the work of Darling et al. (2006) appear to follow closely, the assumption of the life cycle hypothesis that, “the individual does not save at the very early stages of his life. He consumes every income he receives”. Students take up part-time jobs to support the “apparently low” disposable incomes they receive from their parents and guardians. After earning more than they need, they still would not save the surplus but gamble and
purchase products which have negative influences on the consumer’s health. It is therefore interesting to find that Davies and Lea (1995) did not ignore Modigliani and Brumberg’s life cycle theory in interpreting their findings. Obviously, Keynes’ proposition that a greater proportion of any increase in income is saved, may not be valid in among students.

3.3.2 Gender and Spending Behavior

Roberts (1998) confirms Hayhoe et al.’s finding that female students are more of compulsive buyers than their male counterparts. However, contrary to the findings of Hayhoe et al (1999) and Roberts (1998), Davis and Lea (1995) find male students to be the most likely persons with high expenditures. Again, the result of the former group confirmed Hirschman’s finding. Moreover, Hira (1997) finds that adult females are spenders while adult males are hoarders.

3.3.3 Age, Level of Study and Spending Behaviour

Spending behaviour is well known to vary with age of the consumer. Among a sample whose ages ranged from 18-24 years, Roberts (1998) finds about six percent of his study sample to be compulsive buyers. This proportion is rather higher than expected.

In a survey to assess students’ attitude towards debt, Davies and Lea (1995) uses a six page (of A4 size) questionnaire comprising of questions on demography, financial position and habits, and three psychological (attitude, life event and locus of control) scales to assess students’ attitude towards debt among three year groups of students from University of Exeter. The mean ages of the students in the various age groups are within the range of 18-21 years.
Logistic and stepwise regressions analyses are used to predict extent of indebtedness and attitudes to debt. Results of the survey suggest that students have mean expenditures which are relatively higher than their mean incomes. Yet, only a few have savings or economic resources that can help finance their income-expenditure differences. So, most students run into credit card debt. Higher levels of debt, and greater tolerance of debt, are also found to be associated with older students and those who had been at university longer. It is explained that, anticipation of higher future incomes induce students to save very little or nothing at all against their future expenses.

Haultain et al (2010) examines the structure of debt to among a group of New Zealand secondary school students with ages from 16 to 17 and tertiary students who are older. In two separate years, three different studies (1st study comprising a sample of secondary school students; the 2nd of tertiary first year students and the 3rd of some of those in the first sample) are conducted. Whereas the first two are conducted in one year, the third is a confirmation factor analysis that is performed a year after. The sample of respondents for the confirmation analysis includes 391 of the secondary school students used the previous year. The work reveals that one becomes less fearful to debt towards the end of secondary school education and the beginning of his or her first year at the university. This is confirmatory of Davies and Lea (1995) findings.

Young adult consumers between 18 and 25 years have a relaxed attitude to debt and consumer purchasing (McNeill, 2008). This is revealed in a study to explore the consumption habits of the young adult market in New Zealand, as they leave home and
enter into a world of personal fiscal responsibility. A qualitative approach is used to collect and analyse the data. Members of two focused group are interviewed and recorded on audio. The responses are transcribed and the data is analyzed by means of a thematic approach (Stelmer, 2001). Per McNeill’s discovery, young adult consumers view non-essential consumption as a deserved reward for behaviour such as studying or working.

Social pressure is found to be the key driver of consumption choices among this group. It again reveals that majority of spending decisions are made impulsively. The study acknowledges that spending behaviours of consumers are either “reasoned” or “unreasoned” and so does not pre-define what constitute essential or non-essential purchasing. Apparently, this is to liberate consumers to define what their essentials and non-essentials comprise of. Interestingly, majority of students do not consider study materials as part of essentials when allowed to classify the constituents of their spending.

This approach (of allowing respondents to define items in their expenditure) McNeill employs allows one to have a better understanding of spending patterns of these consumers. While one may view certain items as essential, the other may not.

Again, it is revealed that social pressure to consume is an important driver of non-essential consumption among young adults, with many items perceived as necessary to “fit in” with particular social groups, or to make one confident at a social event (especially in relation to fashion purchasing). In addition to this, “gifting” is a major reason for non-essential purchasing, with volume and cost of gifts seeming to grow as respondents become more consumption orientated. Quite different from previous studies on young consumers, McNeill emphasizes on how young consumers develop consumption habits. Again, the
choice of method is commendable as it allows key themes emerging from the data to be well represented while maintaining the value of responses from individual respondents. Using of focus groups in collecting data of qualitative nature is instrumental in arriving at accurate responses because focus groups, when created well, create an atmosphere for respondents to give non-superficial answers.

In an attempt to discover the differences in beliefs about and behaviours towards money by people of diverse ages, Hira (1997) finds that people aged of 40 years and above are more likely to be planners while those aged between 20 to 30 years are more likely to be spenders. Similar to Darling et al (2006) and Roberts (1998), students are found by Hira (1997) as more likely to exhibit “abnormal” spending behaviours than non-students. Contrary to the views of non-students, most students consider their mothers as spenders and their fathers as hoarders.

Of 658 usable responses from respondents in Iowa, 97% are from people aged below 39 years. The study’s results also indicate that between generations, beliefs about money and the spending of money vary significantly. Before age 14, more of the younger respondents than the older respondents earned their own income and had their own saving and current accounts. Unlike the older respondents, a larger proportion of the younger respondents indicate that they had loans and credit cards by age 17.
3.3.4 Emotions and Spending

Researches have shown that emotions do have effect on how people buy and spend money. Roberts (1998) finds that fantasies of respondents positively (and significantly) induce compulsive buying. Results of the work also depict a negative correlation between self-esteem and compulsive buying.

Among a group of students, Pirog III and Roberts (2007) find introverts and emotionally unstable as more likely to have high expenditure patterns and misuse credit cards. This is discovered in a study to ascertain the role personality plays in students' credit card misuse.

In the fall of 2002 self-report surveys were conducted for the study. Data collected from 254 college students from two U.S. private universities, located in New Jersey and Texas is used. Items to measure impulsiveness, elemental traits, college students' propensity to misuse credit cards are adopted from Puri (1996), Mowen (2000) and Roberts and Jones (2001) respectively. Emotional instability, introversion, materialism, and the need for arousal are found to positively relate with credit card misuse. Impulsiveness becomes apparent as a significant central trait that mediates the other two.

Roberts and Jones (2001) conveniently samples 406 American college students for a self-report survey. This is done to investigate the role of attitudes and beliefs about money (money attitudes) and credit card use play in compulsive buying. A modified version of Yamauchi and Templer's (1982) twenty-nine item money attitude scale (MAS) and a causal modeling are used to measure respondents’ money attitudes. The findings suggest that the money attitudes power prestige, distrust, and anxiety closely relate to compulsive buying.
and that credit card use often moderates these relationships. Distrust and anxiety are closely related to compulsive buying among students. People who buy compulsively do that to alleviate negative emotions such as anxiety or tension, or to enhance self-esteem and not because they have the desire to acquire material possessions (O’Guin and Faber, 1989; Faber and O’Guin, 1990).

3.3.5 Social Status and Spending

There exists empirical evidence that social status may exert some influence spending behavior or pattern. Roberts (1998) and (Roberts and Jones, 2001) find that socioeconomic status (family income) has no direct influence on the compulsive buying attitude of students, but the desire for power and prestige (social status) induces high and compulsive spending among students.

Moreover, students with low socio economic origins have low income relative to those from richer backgrounds (Walpole, 2003). They are therefore more likely to spend comparatively lesser than their rich colleagues. This is revealed by Walpole’s (2003) study to examine the effect of socio-economic status on college experience and outcomes. The work makes use of longitudinal data from the national study of college students which is part of the Cooperative Institutional Research Program (CIRP) sponsored by the Higher Education Research Institute (HERI) at UCLA and the American Council on Education.

The study uses the 1985 Student Information Form (SIF), the 1989 Four-Year Follow-Up Survey, and the 1994 Nine-Year Follow-Up Survey. A sample of 12,376 from 209 four-year institutions across the United States is used. The students’ SES (in 1985) is determined using parental income, educational attainment, and occupational prestige obtained from the SIF (Nakao & Treas, 1994). Logistic regression equations are ran for all students, low SES
students, and high SES students. Results of logistic regressions were presented in odds ratios (OR).

### 3.3.6 Financial Knowledge and Spending

Lack of financial education can have negative consequences on the individual’s, saving, spending, investment and borrowing decisions. Among the various socialization agents, family in general and particularly mothers and fathers were identified as the most important sources of influence on respondents’ financial attitudes and beliefs (Hira, 1997). The results of Hira’s study imply that majority of younger people learn the symbolic meaning of money from their families, particularly their parents. Money values are passed down from parents to children through direct and indirect messages. The proportion of those who indicated parents or a family member as the strong influence was higher among younger respondents.

Norvilitis and MacLean (2009) investigate the role parents play in the financial behaviours and attitudes of college students. A sample of 173 college students in a United States university is used. Estimation of the factors was done with maximum likelihood whereas the varimax rotation method was used to facilitate the interpretation of the outcomes. Alternative methods were used to test the robustness of their outcomes. Their findings suggest that children who have minimum credit card problems in college have parents who teach them how to manage allowances and bank accounts.
Over a sample of 924 students from multiple universities across the United States, Chen and Volpe (1998) use a comprehensive questionnaire to probe college students' knowledge of personal finance. The quality and consistency of the survey are further assessed using Cronbach's alpha. Logistic regression was employed to estimate the coefficients of the independent variables due to the dichotomous nature of the dependent variable (financially knowledgeable or not). Though financial knowledge is found to be generally low (53%), it was even lower among those who were non-business majors, women, below age 30, and have little work experience. Low financial knowledge is found among American college students particularly, those in the lower class ranks. Yet, a survey by Princeton Survey Research Associates (1997) portrays the adult population is 11% lower in financial knowledge than the college students.

Furthermore, Chen and Volpe (1998) find that participants with less financial knowledge tend to hold wrong opinions and make incorrect decisions in the areas of general knowledge, savings and borrowing and investments. The incompetency limits one’s ability to make informed financial decisions.

Though Norvilitis and MacLean (2009) did well by testing the validity of their results with other methods, there is silence on the sorts of methods employed. This cannot make one as confident as they are about their outcomes. Yet their findings validate Hira’s as well.
CHAPTER FOUR
RESEARCH METHODOLOGY

4.0 Introduction

This chapter elaborates on the empirical model used in the study. The source of data, its collection procedure and sampling technique employed are also explained. Additionally, the method of estimation is estimation used is justified in this section of the work. A priori expectations of the signs of the independent variables are given and founded on existing theoretical literature.

4.1 The Empirical Model

The work hangs on the theoretical framework of consumption. Specifically, it adopts a recent model by Dornbusch et al (1989). Dornbusch et al. (1989) argue that one’s consumption does not only depend on his income, but also on his accumulated stock of wealth. Per the theory, it cannot be denied that it is from income that spending is done, but the individual’s net worth cannot also be overlooked. One’s net worth determines his actual economic status in society. Consequently, their model takes the form:

\[ C = \alpha W_R + \beta \theta Y_t^d + \beta (1 - \theta) Y_{t-1}^d \]

where;

\[ C = \text{consumption} \]
\[ W_R = \text{real wealth} \]
\[ \alpha, \beta \text{ and } \theta = \text{fractions} \]
\( Y^d = \) current disposable labour income

\( Y^{d, t-1} = \) lagged disposable labour income.

The above single equation model exhibits the features of a modern consumption function and allows modification or inculcation of other indispensable behavioural variables that may exert some influences on the consumption behavior of people. \( \theta \) and \( (1 - \theta) \) are weights attached to present and past incomes respectively.

The Dornbusch et al’s (1989) modern consumption function is adopted and modified to encapsulate variables that are crucial in measuring consumption behaviours of a group of consumers with peculiar characteristics. The past disposable income variable \( (Y^{d, t-1}) \) is omitted in the modified model used in this study. One cannot deny that, one way or the other, the past income of the individual does affect his present consumption. Yet, when one’s past income is not spent, it adds to his or her stock of wealth to influence his consumption in the successive periods. Moreover, income whether present or past can be generically referred to as income. This implies that, if the past income adds to the stock of real wealth, then disposable income would have a weight of 1. Alternatively, merging the incomes and their respective weights, \( Y^d \) would have a weight of 1. Generally, students do not pay direct taxes on the remittances they receive from parents or guardians and other sources. There is therefore no distinction between their gross and net or disposable incomes. Hence the consumption function is modified to depend on wealth and income of the consumer.
Urban’s (2000) PECS reference model for modeling behaviour is incorporated to capture behavioural characteristics of the consumer group under study. Though a number of behaviour models exist, PECS is most suitable in this study as it allows for the construction of a wide range of models for agents whose dynamic behaviour is determined by physical, emotional, cognitive and social factors and who display behaviour containing reactive and deliberative elements (Urban, 2000). It therefore stands out among behaviour models.

The PECS model can be simply written in the form:

\[ B_s = f(\text{Physical conditions, Emotional state, Cognitive capabilities, Social status}) \]

\[ B_s = f(\text{PC, ES, CC, SS}) \]

The above equation depicts that, human behaviour (response) is determined by the physical conditions of the individual; his or her emotional state, cognitive capabilities and social status. Implicatively, the behaviour of the individual would change should any of these factors change.

The PECS model is further infused into the consumption model developed by Dornbusch et al. To determine the influences of accessibility to mobile money service and active use of the service on the consumption behaviour of students, the model is rewritten to capture the accessibility and active use variables.

\[ C = \alpha_0 + \alpha_1 \text{WR} + \beta_1 Y + \delta_1 \text{PC} + \delta_2 \text{ES} + \delta_3 \text{CC} + \delta_4 \text{SS} + \gamma_1 \text{MMACCESS} + \gamma_2 \text{MMACTIVEUSE} + \gamma_3 \text{MMvsATMUSE} + \epsilon_i \]

Other factors such as age, gender, marital status, students’ year at the university, family size, mobile money use, financial management discussion with parents, among many may
exert some influence on students’ consumption behavior. The empirical model used in the estimation is therefore stated as:

\[ C = \alpha_0 + \beta_1 WR + \beta_2 Y + \delta_1 PC + \delta_2 ES + \delta_3 CC + \delta_4 SS + \gamma_1 MM_{ACCESS} + \gamma_2 MM_{ACTIVEUSE} + \gamma_3 MM_{vsATMUSE} + \lambda_1 AGE + \lambda_2 GNDR + \lambda_3 MrS + \lambda_4 LVL + \lambda_5 FS + \lambda_6 FM_{DISC} + \varepsilon_i \]

4.2 Description and Explanation Economic Variables in the Model and their Expected Signs

- **C** = overall consumption expenditure (or overall consumption behaviour). It is measured as a continuous variable.
- **\( \alpha_0 \)** = intercept (part of consumption that is not induced or influenced by any explanatory variable)
- **\( \beta_1 \)** = marginal effect of real wealth of students on their consumption behaviour
- **WR** = real wealth of students

Dornbusch et al. (1989) maintain that one’s consumption does not only depend on his income, but also on his accumulated stock of wealth. For students, these net worth are mostly in the form of “smart” electronic devices and vehicles. Among these devices, (smart) phones, laptop PC tablet computers, and cars were used to assess students’ net worth. This is because these devices are widely used by students. Secondly, these devices may come with expenditures on internet data bundle in the absence of free Wi-Fi connections and on fuel and fluids (in the case of vehicles). Again some devices are a necessary for studies while others are “luxuries”. Students who own and use phones, laptops, and tablet computers only are classified as less wealthy. This is because these are
basic requirement for academic work and therefore do not reflect the true wealth of students. Students who owned and used cars are classified as wealthy. A positive relationship is expected between students’ wealth and their expenditure.

- $\beta_1 \text{WR} =$ proportion of consumption expenditure (behaviour) induced by students’ real wealth

- $\beta_2 =$ marginal effect of students’ income on their consumption behaviour

- $Y =$ students’ income. It is measured as a continuous variable.

Theory has it that, income is an indispensable determinant of consumption spending. Fortunately, empirical works of Easterlin (1974), Brady and Friedman (1947), Alpizar at al. (2004) and many others support theory. It would thus be inappropriate to estimate consumption behaviour without taking incomes into account.

- $B_2 Y =$ proportion of consumption expenditure (behaviour) attributable to students’ income

### 4.3 Description and Explanation of Behaviour Variables in the Model and their Expected Signs

- $\delta_1 =$ the marginal effect of students’ physical condition on their condition on the consumption behaviour

- $PC =$ physical condition of students
The physical condition of a student can influence how much and what he or she spends on. For instance, students with peculiar medical or physical needs for which they are required to see physicians or buy some medications regularly, may have higher expenditures (rising from the extra expenses they make) than their colleagues without special physical or health needs. By taking the physical condition of the students into account in estimating their consumption behaviour, would help tell by how much expenditures of students with peculiar health needs vary from the expenditures of those without special health needs.

To account for students’ physical condition, students were asked whether or not they have any special medical condition for which regular expenses are made.

- $\delta_1PC =$ the total effect of students’ physical condition on their consumption behaviour
- $\delta_2 =$ marginal effect of emotional state of students on their consumption behaviour
- $ES =$ emotional state of students

Researchers have attested that emotional traits affect one’s spending behaviour (Pirog III and Roberts, 2007; Roberts and Jones, 2007). Accounting for emotional differences in estimating the behaviour of a group of people who vary emotionally, enriches the study and increase the reliability of the results. The questionnaire permitted students to rate their self-esteem as low, high or very high and state whether or not they feel accepted by their friends and in their environment.

- $\delta_2ES =$ fraction of consumption expenditure (behaviour) explained by students emotional state.
\[ \delta_3 = \text{marginal effect of students' cognitive ability on their consumption behaviour} \]

\[ \text{CC} = \text{cognitive abilities of students} \]

Urban (2000) makes it clear that, one’s cognition influences his or her behaviour. I therefore find it important to account for any variation in students’ spending behaviour which could result from differences in cognitive abilities. In measuring this, students’ studentship status (regular or fee-paying) was used. Students with regular studentship status are mostly of higher cognitive ability relative to those with fee-paying studentship status.

\[ \delta_3 \text{CC} = \text{total variation in students consumption behaviour explained by their cognitive abilities} \]

\[ \delta_4 = \text{marginal effect of students’ social status on their consumption behaviour} \]

\[ \text{SS} = \text{students’ social status} \]

Roberts (1998) and Walpole (2003) hold that student social status affects his or her spending behaviour. Their empirical works suggest that students with low social status have relatively higher expenditures. Per their findings, such students spend more in order to gain power and prestige. Students’ social status was assumed to be inherited from parents because majority (89.3%) of the respondents do not work and are dependent on their parents or guardians for their needs. As such they do not have any social status different from that of their parents or guardians.

\[ \delta_4 \text{SS} = \text{the total amount of variation in the consumption behaviour of students which is attributable to their social statuses} \]
4.4 Description and Explanation of the Main Variables of Interest and their Expected Signs

- $\gamma_1$ = marginal effect of a change in accessibility to mobile money accounts on the consumption behaviour of students
- $\text{MM}_{\text{ACCESS}}$ = students accessibility to mobile money service

Accessibility to mobile money service cannot be overlooked when assessing the influence of the mobile money technology on students spending. Accounting for this helped clarify by how much the owning a mobile money account as well as proximity to mobile money agents influences a student’s expenditure. Hirschman (1979) Hayhoe et al (1999) maintain that access to credit cards (a technology that facilitates access to funds) does increases one’s spending. For this reason, a positive relationship is expected between accessibility to mobile money accounts and students spending.

In this study, one who has a mobile money account and at the same time, is close to a mobile money agent is said to have access to the mobile money agent. Only students who are five minutes (or less) away from mobile money agents are classified as close. All others are considered as far and without easy access to the mobile money service.

- $\gamma_1\text{MM}_{\text{ACCESS}}$ = the total variation in students consumption behaviour induced by accessibility to mobile money service

- $\gamma_2$ = the marginal effect of a change the active use of the mobile money service on the consumption behaviour of students
- $\text{MM}_{\text{ACTIVEUSE}}$ = Active use of the mobile money service
Besides being having access to the mobile money service, active use of the service is another important factor that cannot merely be swept under the carpet. By considering this in the estimation of students spending behaviour, it made it easy to determine the difference in students’ spending behaviour caused by the variation how actively they use the technology (service).

Per the study, active mobile money users refer to respondents who still send and receive money via the mobile money service at least once in a month. Those who have ever used the service but do not use it any more or do not use it regularly (at least once a month) are classified as inactive users. Based on Roberts’ (1998) study, active use of the mobile money service is expected to impact positively on students spending

- $\gamma_2 \text{MM}_{\text{ACTIVEUSE}} = \text{total amount of variation in the consumption behaviour of students caused by their active use of the service}$

- $\gamma_3 = \text{marginal effect of a change in the frequency of students’ ATM use due to MM use}$

- $\text{MMvsATMuse} = \text{change in ATM use as a result of MM use}$

The objective of the study would not be realized without measuring by how much the spending behaviour of students whose use of mobile money has varied their ATM usage is different from other students. For this reason, students answered questions as to whether or not their mobile money usage has caused their ATM usage to change.

Jack and Suri (2010) find mobile money and banking products to be complementary. If this is the case, then based on Roberts’ (1998) finding as well as that of Jack and Suri’s, a
positive relationship between the students spending their joint usage of two technologies is expected.

- $\gamma_{MMvsATMuse} =$ total variation in the consumption behaviour of students explained by the change in ATM use resulting from the use of the mobile money service

4.5 Description and Explanation Other Variables in the Model and their Expected Signs

To avoid the problem of omitted variables, the researcher was careful to add certain important explanatory variables to the model. The control variables used in the study are defined as follows:

- $\lambda_1 =$ marginal effect of a change in the ages of students on their consumption behaviour
- $\text{AGE} =$ students’ age

This is a control variable in the study to measure the effect of age on the consumption (expenditure) behaviour of students. The ages of student respondents are in years and measured as discrete variable. Empirical works confirm that younger individuals have abnormal spending behaviours. They are “spenders” rather than “planners”. They spend not because they need to, but to gain some form of pleasure, satisfaction or to reward themselves for doing something. They often call such abnormal spending “a treat” that they give themselves from time to time (Roberts, 1998; McNeill, 2008; Hira, 1997). As Hira
empirically discovered, older students are expected to have more prudent consumption expenditures (or behaviours) than younger ones. Davies and Lea (1995), however, find older students to be more prone to being in debt. Per Haultain et al (2010), students get less fearful of debt as they advance in age. The effect of age is expected on consumption expenditure behaviour is therefore unknown a priori.

- $\lambda_1 \text{AGE} =$ total effect of students’ ages on their consumption behaviour

- $\lambda_2 =$ marginal effect of a gender on consumption behaviour

- $\text{GNDR} =$ gender of the student

Gender of consumers cannot also be overlooked in estimating their consumption behaviours because it largely influences how they spend and what they spend on.

The expected sign of this variable is indeterminate. Whereas Hayhoe et al (1999), Hirschman (1979) and Roberts (1998) find that female students mostly compulsive buyers with high expenditures than their male counterparts, Davies and Lea find males to be more likely in debt then females. Thus overall consumption behaviour cannot be expected afore hand, to have some definite relationship with the gender of students. Hayhoe et al further find that males spent more on entertainment, food and electronics whereas females spend more on their appearance and clothing. Per his finding, we expect male students to have higher spending on food and entertainment than females. Females on the other hand, are also expected to spend more on clothing than males. Capturing this independent variable in the model would help in taking sides as to which empirical evidence our findings best identify with.
\( \lambda_2 \text{GNDR} = \) the overall effect of student’s gender on their consumption behaviour

\( \lambda_3 = \) marginal effect of a change in students marital status on their consumption behaviour  
\( \text{MrS} = \) Marital status of students

Marital status of students can affect their spending behaviour. It is usually asserted that married people more organised and cautious in their decision making because their actions and behaviour affect their spouses and family. Accounting for marital differences helped determine how different students’ spending was given one’s marital status.

\( \lambda_3 \text{MrS} = \) overall variation in the change in consumption behavior of students resulting from their marital status

\( \lambda_4 = \) marginal effect of a change in students level of study on their consumption behaviour

\( \text{LVL} = \) students year of study

Per Haultain’s (2010) and Davis and Lea’s (1995), students attitude towards debt and spending varied with how long they have been at the university. Thus, given this information it would be wrong not to account for the variation in the length of time one as spent in the university.

\( \lambda_4 \text{LVL} = \) overall variation in students’ consumption behaviour emanating from their level of study
\( \lambda_s \) = marginal effect of a change in the size of the families to which students belong on their consumption behaviour

\( FS \) = size of family students belong to

Inasmuch as Chen (2013) and Cronqvist and Siegel (2010) find family composition to be deterministic of saving, one cannot rule out its role in determining consumption as well. Empirically, studies depict that majority of younger people learn the symbolic meaning of money from their families, particularly their parents (Hira, 1997). Financial management practices are passed down from parents to children through direct and indirect messages. Hira find that the proportion of those who indicated parents or a family member as the strong influence was higher among younger respondents. Norvilitis and MacLean’s (2009) findings suggest that children who have minimum credit card problems in college have parents who teach them how to manage allowances and bank accounts. Furthermore, Chen and Volpe (1998) realized participants with less financial knowledge tend to hold wrong opinions and make incorrect decisions in the areas of general knowledge, savings and borrowing and investments. The incompetency limits one’s ability to make informed financial decisions. Deductively, we can expect that students who have financial discussion with parents or guardians (particularly about managing their finances), would most likely spend lesser than their colleagues who do not have such discussions with their parents and guardians. Students’ consumption expenditure (behaviour) is expected to relate negatively with financial management discussions had with parents on financial management practices.

\( \lambda_s FS \) = total variation in students consumption behaviour resulting from the size of families students belong to
\[ \lambda_6 = \text{the marginal effect of financial management discussions with students on their consumption behaviour} \]

\[ \text{FM}_{\text{DISC}} = \text{financial management discussion with parents and guardians} \]

Younger people learn the symbolic meaning of money from their families, particularly parents (Hira, 1997). Norvilitis and MacLean (2009) attest that children who have financial management knowledge passed down to them by parents have minimum spending abnormalities. Accounting for this difference is therefore necessary to obtain accurate results.

\[ \Lambda_6 \text{FM}_{\text{DISC}} = \text{the total amount of variation in students’ consumption behaviour explained by financial discussions they have with parents and guardians} \]

\[ \varepsilon_i = \text{all other factors that may exert some form of influence on the overall consumption behaviour being estimated which are not explicitly stated in the consumption model.} \]

**4.6 Data Collection Procedure**

The study makes use of data solely from primary source. This section spells out the detailed procedure by which data is collected for the study.

**4.6.1 Sampling Technique**

The student body of the University of Ghana makes up the study population. The current student population is about 40,000. The origin of data used in this research is solely primary. Questionnaires are administered over a sample of 550 students on the University of Ghana’s main campus (though calculated sample size is approximately 400). Given the
current student population of about forty thousand (40,000), the Yamane’s (1967) formula is employed in calculating for the sample size. The formula is given by:

\[ n = \frac{N}{1+N(e)^2} = \frac{40,000}{1+40,000(0.05)^2} = 396.04 \]

Where: \( N \) = population size

\( n \) = sample size, and

\( e \) = significance level

Using a confidence level of 95\%, \( e = 0.05 \)

The 550 questionnaires were administered equally among 10 halls with questionnaires to each hall. Two are segregated and 8 are non-segregated. The ratio of male to female student is almost 1:1 all the 8 halls. The stratified random sampling technique was used to stratify sample in every hall into homogeneous groups of males and females. Proportion of females and males in each hall is calculated and then a proportionate number of the 55 questionnaires are allocated to each hall and administered among each of the two groups by convenience sampling. For the remaining two which are “all male” and “all female” halls, there is no need for rationing. Only convenient sampling is employed among the latter group of respondents.

Each 7-page questionnaire took approximately 25-30 minutes to answer. They were administered in the evenings when most students had returned from the day’s lectures, had their meals and were quite relaxed to answer. Students were allowed ample time without
pressure to respond to the questionnaires. Each batch of administered questionnaires was collected on the same evening when students were done answering.

Data was collected half-way through the semester. This is because after (resuming from break and) spending about two months in school, students would find it much easier to recall their weekly expenses more accurately. This was needful for the reliability of the study’s results. However, due to the detailed nature of the data collected, time was a major constraint.

Moreover, midway through the semester, most students start serious studies for mid-semester examinations and interim assessments as well as end of semester examinations. Thus majority of students were quite unwilling to partake of the survey and thus unduly prolonging the data collection period.

4.6.2 Method for Analyzing the Data

Realistically, consumption behaviours of individuals depend on several crucial explanatory factors. For this reason, the consumption behaviour of students is estimated using multivariate ordinary least square model. Resorting to such a model enabled a number of explanatory factors that are influential in determining consumption behaviour of people to be captured and their effects estimated. Ordinary least square estimates are derived using the STATA 13 software. The resultant p-values of the estimates are also reported. At a confidence level of 95%, the null hypothesis that each of the variables in question is statistically insignificant is either rejected or not rejected. VIF and covariances of the
independent variables were computed in Stata to ensure the absence of multicolinearity among the independent variables used in the study (see Tables BD and BE in appendix 3).

**Justification for Resorting to OLS**

Prominent among the objectives of the research is to determine the influence the mobile money technology has on students spending behaviour. This necessitates that the relationship between mobile money and students’ spending behaviour (among other factors) well known. The OLS is instrumental in estimating a function which best fits a given data or best approximates the functional relationship between or among given sets of data. This it does yielding unbiased estimators with minimum variance. Among unbiased estimators, the OLS has the minimum variance.

Also, the data to be used in the estimation have the properties which make it possible to apply the OLS in estimating the parameters. First, the dependent variable does not take on two values (0 or 1) but rather a positive or negative value ($\pm\infty$). Thus the error term is normally distributed. For a normal distribution, it requires that, the error term should take any value between positive and negative value up to infinity ($\pm\infty$). In such a case, the error term is homoscedastic (that is, its variance is not dependent on any of the independent variables) and there is no correlation between the error term and any of the explanatory variables (Jones, 2005). Next, the independent variables are non-stochastic (fixed) and there is a unilateral causal relationship between the independent and dependent variables (flowing in the direction of the latter). What is more, there is no exact linear relationship among the independent variables.
Unlike other estimators, the only assumptions that ought to be made when applying the OLS to a given set of data are that: the equation must be linear in parameters and the first order conditions should be solvable.
CHAPTER FIVE

PRESENTATION AND ANALYSIS OF RESULTS

5.1 Introduction

Results from the study are presented and discussed in this chapter of the work. It commences with the descriptive statistics for the dependent as well as all the independent variables used in the study. It then proceeds to the presentation and discussion of regression results. All the analyses are carried out using SPSS, Excel 2010 and STATA version 13 (Stata Corp, 2011).

5.2 Descriptive Statistics

Responses from the survey are reported statistically in simplified, stratified form to give clear understanding of the characteristics associated with the sample understudied.

5.2.1 Descriptive Statistics of Sample’s Demography

Of the 550 questionnaires administered and collected, only 506 of the responses were usable. Of these, 52.2% were males and 47.8% were females. Majority of respondents (79.4%) were aged from 16 to 25 years. Another 19.6% of them were aged from 26 to 35 years. Only a total of 5 (representing 1%) of the respondents fell within the age group of 36-45 years. None was beyond 45 years of age. What is more, 5.3% were married with the rest unmarried. 90.7% were Christians, 7.3% Muslims, 1% (total of 5 persons) were traditionalists. 0.2% had no religious affiliations and 0.8% was of religious affiliations other than the three mentioned above (see Table 1).
Table 1 Samples' Demography

<table>
<thead>
<tr>
<th>GENDER</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
<th>AGE</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>264</td>
<td>52.2</td>
<td>16-25</td>
<td>402</td>
<td>79.4</td>
</tr>
<tr>
<td>Female</td>
<td>242</td>
<td>47.8</td>
<td>26-35</td>
<td>99</td>
<td>19.6</td>
</tr>
<tr>
<td>MARITAL STATUS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>27</td>
<td>5.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unmarried</td>
<td>479</td>
<td>94.7</td>
<td>36-45</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>LEVEL OF STUDY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christianity</td>
<td>459</td>
<td>90.7</td>
<td>100</td>
<td>118</td>
<td>23.3</td>
</tr>
<tr>
<td>Islam</td>
<td>37</td>
<td>7.3</td>
<td>200</td>
<td>122</td>
<td>24.1</td>
</tr>
<tr>
<td>Traditional</td>
<td>5</td>
<td>1</td>
<td>Non degree</td>
<td>2</td>
<td>0.4</td>
</tr>
<tr>
<td>None</td>
<td>1</td>
<td>0.2</td>
<td>Graduate Student</td>
<td>93</td>
<td>18.4</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>0.8</td>
<td>Other</td>
<td>6</td>
<td>1.2</td>
</tr>
</tbody>
</table>

5.2.2 Descriptive Statistics of Sample’s Level of Study

Results from the survey showed a relatively fair distribution of respondents among the various levels of study. The proportions of level first year and second year students (respondents) were equivalent to 23.3% and 24.1% respectively of the total number of respondents. Exactly 20.6% and 12.1% of them were third and final year undergraduate students respectively. Another 18.4% represented the proportion of graduate students’ responses and 1.2% represented visiting students as well as students on exchange programs and other missions in the University.

5.2.3 Descriptive Statistics of Sample’s Families’ Characteristics

About 91% of respondents belong to families with sizes ranging from 4 to 10. The modal family size was 5 (with 24.9% reporting to have this family size). Also, 22.3% of respondents reported to have family sizes of 6. Interestingly 5 people reported to have
family size of 1, implying that they are the only survivors of their nuclear families. Another respondent reported a nuclear family size of 26 persons whereas three others each reports family sizes of 20 persons.

Respondents claimed that 93.7% of their parents or guardians have ever had formal education. Of those with formal education, 11% have obtained only basic education. Also, 35.9% have attained Secondary or Diploma education. Moreover, 53.2% have obtained at least a degree education.

In rating family backgrounds, 77.9% claimed to come from average or middle income families whereas 19.4% reported coming from rich homes. Only 2.8% claimed to have poor family backgrounds. Families’ incomes varied largely. While some reported an average family monthly income of as low as 500 Ghana Cedis, others reported their average family monthly incomes at as high as 10,000 Ghana Cedis. The mean average family income was however about 3,276 Ghana Cedis. For simplicity, students’ background ratings and family incomes are summarized in tables 2.

### Table 2 Students’ Family Economic Status

<table>
<thead>
<tr>
<th>FAMILY BACKGROUND RATING</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
<th>FAMILY MONTHLY INCOME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>14</td>
<td>2.8</td>
<td>MINIMUM 500</td>
</tr>
<tr>
<td>Middle Income</td>
<td>394</td>
<td>77.9</td>
<td>MAXIMUM 10,000</td>
</tr>
<tr>
<td>Rich</td>
<td>98</td>
<td>19.4</td>
<td>AVERAGE 3,276</td>
</tr>
</tbody>
</table>

Source: Author’s computation

### 5.2.4 Descriptive Statistics of Sample’s Mobile Money Use

Responses for how students receive money from their parents revealed that 25.7% regularly received their maintenance allowances monies form their parent through mobile money.
28.1% of them have it paid into their bank accounts and 33.8% usually go home for their maintenance allowances. Moreover, 3% of them usually receive their maintenance allowances from parents via international money transfers. Interestingly, some 6.3% of respondents had their maintenance allowances sent to them from their parents through family and friends. Another 2.2% claim they are given cheques to cash or get their maintenance allowances via means other than the above mentioned. The proportions of respondents and how they receive money regularly from their parents are tabulated in table 3.

**Table 3 Sample’s Regular Means of Receiving Money from Parents’ or Guardians**

<table>
<thead>
<tr>
<th>HOW MONEY IS RECEIVED FROM PARENTS</th>
<th>PERCENTAGE OF RESPONDENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile money</td>
<td>25.7</td>
</tr>
<tr>
<td>Paid into bank accounts</td>
<td>28.1</td>
</tr>
<tr>
<td>International transfers</td>
<td>3</td>
</tr>
<tr>
<td>through family and friends</td>
<td>6.3</td>
</tr>
<tr>
<td>Given cheques to cash</td>
<td>2.2</td>
</tr>
<tr>
<td>Go home for it</td>
<td>33.8</td>
</tr>
<tr>
<td>Irregular means of receiving</td>
<td>0.9</td>
</tr>
</tbody>
</table>

*Source: Author’s computation*

While 44.7% of respondents had mobile money accounts, 55.3% did not have mobile money accounts. Out of the 44.7% of respondents who had mobile money accounts, 46.5% of respondents claim their most important reason for opening and maintaining a mobile money account was to receive money conveniently. Some 32.3% of them also reported that they opened and maintained a mobile money account so as to have access to their monies at all times. Another 13.3% kept their accounts to enable them but airtime conveniently
while 4.9% (11 persons) reported they maintained their mobile money accounts most importantly for the purpose saving conveniently. It however turns out that 23 persons (representing 4.5%) of those who reported saving save on the mobile money accounts. Convenience could be a reason why more than twice the number of persons who regarded saving to be their most important reason for maintaining a mobile money account use the medium as saving platform. Keeping money on one’s mobile money wallet is not only safe, but also very convenient. One can avoid long queues at banks (when making deposits or withdrawals) and withdraw at any time within the 24 hours of each of the seven days in a week.

**Table 4 Mobile Money Service Usage**

<table>
<thead>
<tr>
<th>Mobile Money Service Usage</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Money Account Holding</td>
<td>44.7</td>
<td>55.3</td>
</tr>
<tr>
<td>Ever Received via Mobile Money</td>
<td>41.3</td>
<td>58.7</td>
</tr>
<tr>
<td>Ever Sent via Mobile Money</td>
<td>55.5</td>
<td>44.5</td>
</tr>
<tr>
<td>Still Receive via Mobile Money</td>
<td>34.0</td>
<td>66.0</td>
</tr>
<tr>
<td>Still Send via Mobile Money</td>
<td>39.5</td>
<td>60.5</td>
</tr>
</tbody>
</table>

*Source: Author’s computation*

As to their active use of the service, 41.3% have ever received money via mobile money and 34% still receive money via the service. Concerning the frequency at which money is received via the service, 18.6% receive money weekly, 14.5% receive every two weeks and 47.1% receive monthly. Another 19.8% receive at frequencies other than the above mentioned ones. Whereas 55.5% have ever sent money via mobile money, only 39.5% of them still use the medium to send money.
Amazingly, 14.2% more respondents reported to have ever sent money via mobile money than those who reported to have ever received. Beyond that, 5.5% more respondents reported that they still send money via the medium than those who claim they still receive via the service. This probably because the technology is relatively new so most parents and guardians may be relatively less familiar to it (compared to students). They therefore may prefer other money transfer means to send monies to their wards in school whereas students would prefer sending monies via mobile money for its convenience, speed and reliability.

While 48.5% of them send monies at frequencies other than monthly, fortnightly and weekly, quite a number of them (representing 36 %) claim they send money monthly. Again, 3% send money more than once weekly, 8% send money once every week and 4.5% of them send money fortnightly through mobile money.

Furthermore, when asked their frequency of airtime purchase via mobile money in a week, 35.4% of respondents reported they never bought airtime in a week via mobile money. Interestingly, however, 27.9% reported that they buy airtime via mobile money as often as they need it. Whereas 10.5% of respondents “often” buy airtime via mobile money, 13.4% of them do that quite often and 12.8% rarely buy via the medium.

Figure 1 is a graphical presentation of the proportions of sampled students and the various frequencies at which the make airtime purchases via mobile money.

**Figure 1 A Pie Chart Showing the Frequencies of Airtime Purchase by Students**
Additional, 34.2% of students reside less than 5 minutes away from a mobile money agent. Another 28.7% and 20.4% reside 5-10 minutes and 10-20 minutes respectively away from the closest mobile money agent. Still, 11.5% of them reside about 20-30 minutes away from the closest mobile money agent. Some 5.3% of them also reside more than 30 minutes away from the closest mobile money agent available in their location.

When asked whether the frequency and volume of their mobile money transactions would change if distance to the closest mobile money agent changed, only 26.9% of respondents responded in the affirmative. The remaining 73.1% were indifferent and reported that distance to mobile money agent is not a factor strong enough to influence the frequency and volume of their mobile money transactions.

5.2.5 Descriptive Statistics on Students’ Spending

Though the amount of airtime purchased ranged from 5-50 Ghana Cedis, the modal amount of monthly airtime purchase was 5 Ghana Cedis. Proportionately, about 33.6% purchase 5 Ghana Cedis worth of airtime in a month. Yet, 32.8% also purchase 10 Ghana Cedis worth of credit for monthly use. In general, 69.2% purchased 5-10 Ghana cedis worth of monthly
airtime. Whereas 91.5% of respondents purchase 5-20 Ghana Cedis worth of air time monthly, some 8.5% of them purchase more than 20 Ghana Cedis on a monthly basis.

Furthermore, 54.5% of respondents claim they cook regularly. Of the remaining 45.5% who do not cook regularly, 73.5% of them buy cooked food regularly. Some 10.4% of them eat food brought from home and 4.8% eat from friends.

Students spend various sums ranging from 70 Ghana Cedis to 400 Ghana Cedis on food and drinks monthly. Nonetheless, 70.9% of respondents spend an average of 100-200 Ghana Cedis on food and drinks on a monthly basis.

Similarly, spending on entertainment portrayed differences among individual students. While some 27.7% of students do not spend anything on entertainment in a month on the average, 13.2% of respondents spend 5 Ghana Cedis monthly on entertainment. The modal monthly expenditure on entertainment was 10 Ghana Cedis and is spent by 16.8% of the respondents. Yet, there exist some 4 respondents (representing 0.8%) who spend more than 100 Ghana Cedis also for entertainment on a monthly basis.

The variation in monthly expenditure on clothing further marked out students’ individual differences and preferences. While some 8.5% spent 10-15 Ghana Cedis averagely on clothing, 0.8% of respondents spent 250-500 Ghana Cedis on clothes on a monthly basis. Inasmuch as majority (representing 48.8%) purchased clothes worth 20-50 Ghana Cedis monthly, a good proportion (16.7% of respondents) purchase on a monthly basis, clothes worth 60-150 Ghana Cedis. 22.9% of respondents reported that they do not spend money on clothing mainly because their clothes were usually bought for them by their parents or guardians.
Concerning students’ spending on academic materials, a vast proportion of 71.8% of sampled respondents spent 5-20 Ghana Cedis on academic materials monthly. This notwithstanding, there exist some 10.5% who spent 50-100 Ghana Cedis on learning materials monthly. Another 5.9% of respondents claim they do not spend anything at all on study materials in a month. They claim to make use of free internet facilities all at vantage locations on the university’s campus to download study materials and so they do not spend money on printing or photocopying study materials.

Total spending varied largely among individual students. While some spent an average of 80 Ghana Cedis monthly, some also spend as much as 900 Ghana cedis monthly. The overall mean spending was about 250 Ghana Cedis per month.

Table 1 presents a breakdown of mean expenditures by gender, age, marital status and the level of students. In addition, figures 1, 2, 3 and 4 present monthly mean expenditures of students on food and drinks, entertainment, study materials, airtime clothing, as well as their mean monthly overall expenditures by the various categories as presented in table 1.

The graphical presentations of their mean monthly expenses together with the figures in table 5 make it facile to portray the differences among students with different characteristics.

Table 5

<table>
<thead>
<tr>
<th>Gender</th>
<th>Mean Total Expenditure in GHe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>263.711</td>
</tr>
<tr>
<td>Female</td>
<td>245.1129</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>321.4815</td>
</tr>
<tr>
<td>Single</td>
<td>242.7996</td>
</tr>
<tr>
<td>Level</td>
<td>Mean Total Expenditure in GHe</td>
</tr>
<tr>
<td>-----------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>Non-degree</td>
<td>225.00</td>
</tr>
<tr>
<td>100</td>
<td>251.5763</td>
</tr>
<tr>
<td>200</td>
<td>226.0656</td>
</tr>
<tr>
<td>300</td>
<td>229.7115</td>
</tr>
<tr>
<td>400</td>
<td>232.541</td>
</tr>
<tr>
<td>Graduate</td>
<td>296.129</td>
</tr>
<tr>
<td>Other</td>
<td>275</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>Mean Total Expenditure in GHe</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-25</td>
<td>236.7438</td>
</tr>
<tr>
<td>26-35</td>
<td>285.1515</td>
</tr>
<tr>
<td>36-45</td>
<td>316</td>
</tr>
</tbody>
</table>

Source: Author’s computation

These expenses were funded with total receipts (or incomes) ranging from 100 Ghana Cedis to 1000 Ghana Cedis (the mean was about 330 Ghana Cedis). It was not surprising to find 11.1% of respondents having total expenditures of 400 Ghana Cedis and above. This is because, though 89.3% of respondents reported that they were not engaged in any income generating activity, 10.7% of them were earning incomes from other activities besides studying.
Source: Author’s computation from primary data

From both table 1 and the Figure 2, it is evident that female students are more prudent in their spending than males colleagues. This is not much surprising because, most African females are seen as home makers and managers. As such they are given the kind of training which equip them to function efficiently in that capacity. Unlike their male counterparts, they are trained to be more economical and prudent in using financial resources. The outcome of the survey on spending with respect to gender, reflects the findings of Davies and Lea (1995) who found that males were most likely to have higher expenses relative to females.
The statistical evidence presented in figure 3 shows that among the sampled students, married students have relatively higher monthly mean expenditures than their unmarried colleagues. This is not farfetched from reality as marriage comes with responsibilities of which financial obligation are part.

Source: Author’s computation from primary data
Figure 4 shows that, younger students spend averagely less in a month than older students. Older students are most likely to be employed and earn incomes while studying. They are also more likely to be married or have other responsibilities (including taking care of the home or other dependent) which may require that they spend more averagely, on a monthly basis. Younger ones, on the other hand, are more likely to depend on their parents and guardians for monies they have to spend. They are thus answerable and accountable to
them about how they spend the monies given them. They are therefore more likely to have lower expenditures.

![Figure 5](image)

**Figure 5**  
A Clustered Bar Chart Showing the Mean Expenditures of Students by Level

Mean Expenditures are in Ghana Cedis

*Source: Author’s computation from primary data*

What is more, students’ expenditure distribution by levels (how long a student had been at the university) was rather undulating than skewed. Expenditure decreased consistently from among first to final year students. This could imply that first years are given more money for upkeep than higher level students because their parents and guardians assume they are new in the university and may not have enough friends to rely on it times of...
desperate need. It could also be that over their years of stay at the university, higher level students have become more and more prudent in managing their financial resources. “Also, as one gets closer to the graduating year, he or she starts saving against his petty need during after-school period of job search” was the exact response given by an interviewee in his attempt to explain the trend.

Besides visiting and exchange students, Graduate students had the highest expenditures. This could be due to the annual bursary they receive from the government to support funding their graduate study. Others also work with formal institutions where incomes are relatively high because they already have degrees to help them secure such jobs. Given additional incomes therefore, they can afford to spend more.

Generally, 54.8% of the respondents reported they have spending budgets and 45.2% of them do not have spending budgets. When budgets are exceeded, 65% usually call home for more money to be given to them and 15.4% also borrow from friends. Another 2.2% buy on credit and 17.4% find other means of funding their expenses. It was interesting to find that 57.4% of respondents have ever borrowed to spend while 42.6% of them have never attempted to survive on a loan from a friend while in school.

Whereas 19.6% reported that they do not save, the remaining 80.4% of respondents saved certain fractions of their incomes (total receipts). The minimum proportion of income that was reported saved was 5% with 30% being the maximum. However, 66.8% of respondents saved proportions of their receipts ranging from 10%-20%. Majority (78.5%) of respondents who saved from their receipts, did so with formal banks.
5.2.6 Descriptive Statistics of Sample’s Emotional Characteristics

A total number of 497 students responded to the question about their self-esteem. Of this, 14 persons (representing 2.8%) reported that they have low self-esteem. This notwithstanding, 338 (68.6%) and 142 (28.1%) of them have high and very high self-esteesms respectively.

Again, 500 persons responded on their feeling of acceptance among their friends and in their environment. Among these too, 95.3% felt accepted and 4.7% did not feel accepted.

5.2.7 Descriptive Statistics of Sample’s Physical Condition

Of the 497 students who disclosed whether or not they had special medical conditions for which regular expenses are made, 9.5% had special medical condition and 90.5% had none.

5.2.8 Descriptive Statistics of Sample’s Financial Management Discussion or Knowledge

It was good to find that 61.3% of respondents have ever had financial management discussions with the parents or guardian. On the other hand, however, 38.7% have never had any form of discussion in relation to how to manage their finances with their parents or guardians all their life.
5.2.9 Descriptive Statistics of Sample’s Use of the Automated Teller Machines (ATMs)

To ascertain whether or not the use of mobile uptake and usage of mobile money has any effect on the use of ATM, students who use mobile money and ATMs were asked whether their ATM usage has changed ever since they began to use the mobile money services. The survey revealed that 77.3% of the respondents use the automated teller machine and 22.7% do not. Though 56.5% of respondents claim mobile money has not influence their frequency of using the ATM, 43.5% reported that mobile money has changed how often they use the ATM.

Figure 6 shows the proportion of students whose usage of the mobile money has caused a change in their usage of automated teller machines (ATM) relative to those whose ATM usage remained the same.

**Figure 6**

* A bar chart showing the proportion of students whose mobile money usage has affected or not effected their ATM usage

*Source: Author’s computation from primary data*
While some 43.5% claim their usage of mobile money has resultanty varied their use of ATMs, more the half of the respondents claim their usage of ATM has remained invariant. This majority claim they can use one of either technologies without the other, but using them together makes students’ lives much more simplified.

Upon interviewing some respondents who have varied their ATM usage, some reported that they frequent the ATMs more often than before. Their reason is that, a partnership between a major bank here in Ghana (Ecobank) and a major mobile money service provider (MTN) now makes it possible for withdrawals from mobile money wallets to be made on the bank’s ATMs. Others also claim there is no need frequenting ATMs as before because they now have access to mobile money.

Evidently, while students do not view the mobile money technology is necessarily substitutive or complementary to the ATM technology; they affirm using them jointly is better for student-life.

5.2.10 Descriptive Statistics of Sample’s Cognitive Characteristics

The largest fraction of respondents (representing 88.3%) held regular studentships and 7.6% of them were full-fee-paying students. Scholarship/studentship awards were held by only 2.4% of respondents. A remaining 1.8% of them held studentship statuses different from those already mentioned.

In addition, 35% of the respondents studied in departments whose courses are highly competitive. Similarly, 44.9% belonged to departments whose courses are averagely competitive and another 20.2% also belonged to those whose level of competitiveness is
relatively low. *(The competitiveness of a department’s courses is determined by the entry grade requirements and subsequent requirements a student must meet to continue reading courses from that department for an additional year.)*

### 5.2.11 Descriptive Statistics of Sample’s Real Wealth

The survey revealed that 19.8% of respondents had no relatively expensive possession than smart phones. Some 5.5% of respondents also had no other possession that was relatively liquid among students than a laptop computer. 0.8% of them had as their only possessions, tablet computers while 0.6% had only cars as their relatively liquid possession. Those who had no smart phone, laptop computer, tablet computer or a car, made up 2% of the respondents. Another 2% claimed they had all the above mentioned items. It was not surprising to find that 69.4% of the respondents had more than one of the above mentioned items but not all of them.

### 5.3 Presentation and discussion of regression results

The ordinary least square model is used to assess the influence of mobile money use on the spending behaviour of students. Overall expenditure of students is the dependent variable. Regression results are displayed in table 2.
| Overall expenditure                  | Coef  | Std. Err | T    | P>|t|  | [95% Conf Interval] |
|-------------------------------------|-------|----------|------|-----|-----------------|
| **Gender** (Male)                   |       |          |      |     |                 |
| Female                              | -2.38218 | 5.877457 | -0.41 | 0.685 | -13.93918 | 9.174824 |
| Age                                 | -8.907501 | 9.009984 | -0.99 | 0.323 | -26.62408 | 8.809075 |
| Level                               | -1.399412 | 2.127717 | -0.66 | 0.511 | -5.5832 | 2.784376 |
| **Marital status** (Married)        |       |          |      |     |                 |
| Unmarried                           | 22.12924 | 13.72837 | 1.61 | 0.108 | -4.86523 | 49.12371 |
| **Family size**                     |       |          |      |     |                 |
| No medical condition                | 16.92798* | 9.793119 | 1.73 | 0.085 | -2.328497 | 36.18446 |
| **Physical condition** (Medical condition) |       |          |      |     |                 |
| No medical condition                | 16.92798* | 9.793119 | 1.73 | 0.085 | -2.328497 | 36.18446 |
| **Emotional condition** (Feel accepted) |       |          |      |     |                 |
| Feel unaccepted                     | -8.208771 | 15.21961 | -0.54 | 0.590 | -38.1355 | 21.71796 |
| **Cognitive ability** (Regular)     |       |          |      |     |                 |
| Fee-paying                           | 8.801955* | 5.04504 | 1.74 | 0.082 | -1.118245 | 18.72215 |
| **Social status** (Educated parent) |       |          |      |     |                 |
| Non-educated parent                 | 22.87302** | 11.53415 | 1.98 | 0.048 | 0.1931185 | 45.55293 |
| **MMactiveuse** (Active user)       |       |          |      |     |                 |
| Non-active user                     | -19.10283* | 11.22254 | -1.7 | 0.090 | -41.17001 | 2.964353 |
| **MMaccess (Access)** (No access)   |       |          |      |     |                 |
| MMvsATMuse                          | -0.4874158 | 1.319644 | -0.37 | 0.712 | -3.082268 | 2.107437 |
| **Financial mgt dis’n** (Have)      |       |          |      |     |                 |
| Have not                            | -12.32385** | 5.847386 | -2.11 | 0.036 | -23.82173 | -0.8259769 |
| **Real wealth** (Less wealthy)      |       |          |      |     |                 |
| Wealthy                             | 4.125794* | 2.25213 | 1.83 | 0.068 | -0.3026317 | 8.554219 |
| **Income earning status** (Work)    |       |          |      |     |                 |
| Do not work                         | 53.22152*** | 10.21628 | 5.21 | 0.000 | 33.13297 | 73.31007 |
| **Income**                          | 0.6005548*** | 0.0176406 | 34.04 | 0.000 | 0.5658677 | 0.6352419 |
| _cons                               | -109.2623 | 56.44768 | -1.94 | 0.054 | -220.2569 | 1.732284 |

*Source: Author’s computation from primary data*
Note: ***, ** and* denote 1%, 5% and 10% respectively. R-square and Adjusted R-square are 0.8081 and 0.7999 respectively.

Among findings of the study, at 10% significance level, active use of the mobile money service by students influenced students’ spending behaviour. Per the outcome of the study, students who often send and receive money via mobile money spend about 19.1 Ghana Cedis more than those who do not actively use the technology. Apparently, the mobile money technology facilitates students’ access to money thereby inducing high spending among those that use it actively.

Roberts (1998) affirms that the use of a technology that facilitates access to fund induces high spending among students. This finding by Roberts (1998) is confirmed by the findings of this study. Inasmuch as the technology that facilitates access to fund are different in the two studies (credit cards in Roberts’ study and mobile money in my study), it turned out that in both cases, active use induces higher spending among students.

Furthermore, the effect of mobile money usage on ATM usage was another significant factor which influences the spending behaviour of students at 5%. Students whose mobile money usage has not affected their ATM usage spend about 14.23 Ghana Cedis more than their colleagues whose ATM usage has been affected by their mobile money usage. Obviously, such students now have two separate mediums through which they receive money. While those who prefer sending monies to these students via their bank accounts may continue to do so, others who prefer a simpler means of sending money to them can
now do so via mobile money. Resultantly, they would have more money than before and can also spend more.

Amazingly, students who have never had any financial management discussion with their parents spend about 12.32 Ghana Cedis less than what students who have ever had any financial management discussion with parents spend. This implies that, parents know their children well enough and give them only relevant advices. Probably, students whose parents do not advise them on their finances are already prudent with their financial resources and do not need any cautions for now about how they manage their finances. Contrary to the findings of Hira (1997), younger individuals appear to have inherent financial attitudes and beliefs which are not influenced by those of their parents. This finding of my study was also not in accordance with the findings of Volpe (1998) and Norvilitis and MacLean (2009). Yet, financial management discussion between parents and wards was relevant to their spending behaviour at 10% significance level.

Among behavioral characteristics, students’ Physical condition significantly determined students’ spending behaviour at 10%. Incredibly, it turned out that, students with no medical condition spend about 16.93 Ghana Cedis more than those with special medical condition. Yet, it is logical that students with special medical conditions would be given special attention by their parents and guardians. This makes it quite probable that such students would be provided with most of their basic needs and may not have to spend much. Students with special medical conditions with regards to food for example, would most likely be sent food from home. Others with physical disabilities (with regards to sight or
mobility) are also less likely to go out partying at night or on weekends especially outside the university community and would spend less than what others without any physical disability may spend in a month.

Moreover, at 10%, students’ cognitive ability was also instrumental in explaining students’ spending behaviour. Students with studentship statuses other than “regular” spend about 8.80 Ghana Cedis more than their colleagues with regular studentship status.

Non-regular students are those with “full-fee-paying”, “scholarship” or “visiting student” statuses. Most full-fee-paying students are mostly from wealthy homes which can afford to pay for university tuition for their wards. Such students are often low cognitive students. To enable them to keep up with their colleagues on their various programmes, their parents are most likely to provide almost everything they need (including more money) in the “name of” academic work. It is not at all surprising therefore that, such students spend more on a monthly basis relative to regular students.

Scholarship and exchange students are also more likely to receive monthly allowances and stipends from the scholarship providers and exchange program financiers. Thus, they more probably have more money to spend relative to regular students.

In addition, Students’ social status was also a key influence of students spending behaviour. The educational status of students’ parent (i.e. had any formal education or not) was used to proxy for students’ social status.

At 5% significance level, students with low social statuses tend to spend about 22.9 Ghana Cedis more than those with relatively high social statuses. This is in line with the findings
of Roberts (1998). While this result may be unexpected, the desire for power and prestige among students of low social statuses could be what induces them to spend relatively more.

Furthermore, real wealth of students keenly influenced their spending behaviour at 10% significance level. The study revealed that on a monthly basis, wealthier students spend about 4.13 Ghana Cedis more than their colleague students who are relatively less wealthy. This can be explained by the fact that, students with more assets can generate more income from them and would as such spend more than those with fewer assets. Students with cars for example, rent out their cars for other uses and make money. They therefore have the means to afford relatively higher expenses.

Again, students’ income earning status was significant at 1% in influencing students’ spending behaviour. Far from expectations, students who did not work or were not engaged in any income earning activity spent about 53 Ghana Cedis more than students who worked alongside schooling.

In follow-up telephone interviews with some of the respondents, some of those who work claimed they work to top up the very low upkeep allowances they receive from their parents. Others also claimed they worked to save monies for their needs after school (specifically, before they get their first jobs). Another group of interviewees also mentioned that they do not work to live luxurious lives today but to invest and save for their future. Undeniably, they saved their earnings to mobilize some start-up funds for businesses they intend to start after school. Obviously such students do not value present spending over future and hence would save more and spend less of what they receive from working.
Next, at a significance level of 1% students spending increases by about 0.6 Ghana Cedis for every 1 Ghana Cedis increase in his income (total receipts). Generally, higher income positively correlates with higher ability to pay. This therefore explains why students with relatively higher incomes spend relatively more. This is very consistent with literature (Boulding, 1945).
CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATION

6.0 Introduction

A summary of the entire study is presented in this chapter. Finding from the study are highlighted and used as the basis for conclusions drawn.

6.1 Summary and Conclusion

Technology is known to influence behaviours and lifestyles of its users (Roberts, 1998). In developing countries, the mobile phone technology has become the most widely adopted and readily used (Jack and Suri, 2010), resultantly, the mobile money technology sought to thrive in a number of developing countries including Afghanistan, Tanzania, Uganda, South Africa, Ghana and Kenya (where it actually throve).

This study was undertaken with objective of assessing the influence of technology on human behaviour. Given that mobile money is one technology that has been widely assimilated shortly after its introduction to developing countries (Jack and Suri, 2009) and that students are on group who easily adopt computer and mobile phone related technologies, the influence mobile money technology on students’ spending behaviour was used as case study.

Data used in the study was of primary source and was collected by means of a questionnaire (please see appendix for questionnaire). A total of 550 questionnaires were administered among 10 residential halls on the University of Ghana’s main campus. yet, only 506 responses were useable in the study. The modern consumption model developed by
Dornbusch *et al* (1989) was adopted and modified by inculcating Urban’s (2000) PECS behavioural factors (model) and accounting for demographic and other useful characteristics which can influence spending behaviour. An ordinary least square consumption behaviour model was used to estimate the results derived from the study.

Results from the study reinforced some findings of studies reviewed in this paper and contradicted others. Whereas Jack and Suri (2010) and Mbiti and Weil (2011) find that mobile money complements banking products, this study reveals that banking products such as ATM are jointly used with mobile money but the two are not necessarily complements (because an increase in the use of either of them does not result in an increased use of the other). Yet majority (56.5%) of respondents reported that their usage of mobile money did not change the frequency at which they use ATMs.

Moreover, active use of the mobile money technology was significant at 10% in influencing students’ spending behaviour. Active mobile money users spend about 19 Ghana Cedis more than inactive mobile money users spend each month. This finding happened to affirm the findings of Roberts (1998) and they both imply that active use of a technology indeed influences the behaviour of its users.

Again there was evidence from my results that at 5% significance level, the effect of mobile money usage on the frequency of ATM usage also influences student’s spending behaviour. Students whose ATM usage had not been affected by their mobile money usage tend to
spend 14.23 Ghana Cedis more than students whose ATM usage had been affected by their mobile money usage. The implication of this finding is that people who use two or more technologies that facilitates access to funds or money at any point in time are more likely to spend more than those who trade the usage of one of such technologies for the other.

The study further revealed that students whose parents had ever had any financial management discussions with them spend about 12.32 Ghana Cedis more than those who have never engaged in any financial management discussion with their parents. This finding of mine was not in conformity with Hira’s (1997) or Volpe’s (1998). Whereas they find that younger adults learn financial attitudes from parents and that, students who have never had any financial management discussions with their parents have relatively higher expenditures, my finding varied. I find that younger adults have their own attitudes and beliefs which are not induced by what parents try to inculcate in them.

Still, three of the four behavioural factors proposed by Urban (2000) significantly influenced students’ spending behaviour. Physical condition of students affected their spending behaviour at 10% significance level. Students without any special medical condition tend to spend about 16.93 Ghana Cedis more than those with special medical (physical) conditions.

At 10% significance level, the cognitive capability of students cannot be overlooked as a key determinant of students’ spending behaviour. Lower cognitive students spend about 8.8% more than higher cognitive students. This extra expenditure could be on
academic materials needed to help lower cognitive students keep up academically with higher cognitive ones.

Again, students’ social status was also significant at 5% in ascertaining the spending behaviour of students. The desire for power and prestige is the most probable explanation for students of lower social status to spend about 22.8 Ghana Cedis more than those of higher social status.

Additionally, students’ real wealth and income were remarkably, important determinants of students’ spending behaviour at 10% and 1% significance levels respectively. Wealthier students and those with higher income (receipts) had relatively higher expenditures than their colleagues. Yet the study showed that at 1% significance level, students who do not work (engage in any income earning activity) alongside schooling are more extravagant relative to students who work. The former group spend about 53 Ghana Cedis more than latter.

In a nutshell, it is evident from this study that besides economic factors such as income, real wealth and income earning status; human behavioural factors as well as technologies used by humans to facilitate their access to funds also affect their spending behaviour.
6.2 Recommendations

- Technological growth should not be curtailed as it is accompanied by several benefits to humans and their society. Yet, given that technology influences behaviours, it is recommended that students will be cautious in how they use technology so as to maximize the positive influences (such as increases in productivity) and minimize the negative influences (such as indiscriminate spending) that using technology can impact on human behaviour.

- Per the finding of this study and that of Roberts’ (1998), having access to a technology may not be as effectual in yielding desire results as active use of the technology. It is therefore recommended that, mobile money operating companies give more attention to enticing the Ghanaian populace to use the mobile money technology (service) than they give to improving access to it. It is by this mean that it can most easily financially include the unbanked.

- At Macroeconomic level, electronic (money) credit generated by the mobile money technology should not be overlooked by policy makers when making monetary policies as it also influences individual user’s consumption spending. It is about time policy makers strategize on how to manage economic shocks that could emanate from the use of the technology.
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Appendix 1: Survey Questionnaire

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
</table>
| Q1 Gender                         | 1. Male  
                                     | 2. Female                                                             |
| Q2 Age                            | 1. 16-25  
                                     | 2. 26-35  
                                     | 3. 36-45  
                                     | 4. 46 and above                                                               |
| Q3 Which year/level are you in?    | 1. 100  
                                     | 2. 200  
                                     | 3. 300  
                                     | 4. 400  
                                     | 5. Non-Degree  
                                     | 6. Graduate student  
                                     | 7. Other (please specify) ..........|
| Are you married?                   | 1. Yes  
                                     | 2. No                                                                |
| Which religious group do you belong to? | 1. Christianity  
                                     | 2. Islam  
                                     | 3. Traditional  
                                     | 4. None  
                                     | 5. Other (Please specify) ..........|
| What is the size of your nuclear family? |                                      |
| Has your parent or guardian had any formal education? | 1. Yes  
                                     | 2. No                                                                |
| If yes, what is his or her highest level of educational attainment? | 1. Basic level  
                                     | 2. SHS/Post-Secondary/Diploma  
                                     | 3. Degree  
<pre><code>                                 | 4. Postgraduate Diploma/Masters/PHD and beyond                                    |
</code></pre>
<p>| What is your family’s average income? |                                      |</p>
<table>
<thead>
<tr>
<th>Q12</th>
<th>Do you have a mobile money account?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Yes</td>
<td></td>
</tr>
<tr>
<td>2. No</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Q13</th>
<th>If yes, which Mobile Money Service(s) Network (MMSN) are you registered on?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Airtel Money</td>
<td></td>
</tr>
<tr>
<td>2. Tigo Cash</td>
<td></td>
</tr>
<tr>
<td>3. MTN Mobile Money</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q14</th>
<th>Which <strong>one</strong> of the following is the most important reason you have for opening and maintaining a mobile money account?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To receive remittances and transfer payments conveniently</td>
<td></td>
</tr>
<tr>
<td>2. To save conveniently</td>
<td></td>
</tr>
<tr>
<td>3. To buy airtime conveniently</td>
<td></td>
</tr>
<tr>
<td>4. To have access to my money at all times, provided am with my phone or have my PIN</td>
<td></td>
</tr>
<tr>
<td>5. Other, please specify</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Q15</th>
<th>Have you ever received remittance from your parents/guardians through mobile money?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Yes</td>
<td></td>
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<tr>
<td>2. No</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q16</th>
<th>Do you still receive money from your parents/guardians via mobile money?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Yes</td>
<td></td>
</tr>
<tr>
<td>2. No</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q17</th>
<th>If yes, how often do you receive them?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Weekly</td>
<td></td>
</tr>
<tr>
<td>2. Every Two weeks</td>
<td></td>
</tr>
<tr>
<td>3. Monthly</td>
<td></td>
</tr>
<tr>
<td>4. Other (please specify)</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Q18</th>
<th>Q1. How much do you receive on the average in a month?</th>
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</table>

<table>
<thead>
<tr>
<th>How do you rate your family background?</th>
</tr>
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<tbody>
<tr>
<td>1. Poor</td>
</tr>
<tr>
<td>2. Middle Income</td>
</tr>
<tr>
<td>3. Rich</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How do you receive money from your parents/guardians?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I go home for it</td>
</tr>
<tr>
<td>2. Through friends and family</td>
</tr>
<tr>
<td>3. By postal order</td>
</tr>
<tr>
<td>4. By mobile money</td>
</tr>
<tr>
<td>5. Paid into my bank account</td>
</tr>
<tr>
<td>6. Given a cheque to cash</td>
</tr>
<tr>
<td>7. International money transfers</td>
</tr>
<tr>
<td>8. Other (please specify)</td>
</tr>
</tbody>
</table>
| Q19 | Have you ever received any remittance from anyone besides your parents or guardians? | 1. Yes  
2. No |
| Q20 | Do you still receive any remittances from others other than parents and guardians though mobile money? | 1. Yes  
2. No |
| Q21 | If yes, how often do you receive them? | 1. Weekly  
2. Every Two weeks  
3. Monthly  
4. Other (please specify) ........ |
| Q22 | How much do you receive on the average in a week from other senders besides parents and guardians? | ........ |
| Q23 | Have you ever sent money via mobile money? | 1. Yes  
2. No |
| Q24 | Do you still send money via mobile money? | 1. Yes  
2. No |
| Q25 | If yes, how often do you send it? | 1. More Than Once A Week  
2. Weekly  
3. Every Two Weeks  
4. Monthly  
5. Other (please specify) ........ |
| Q26 | How much do you send on the average? | ........ |
| Q27 | How many minutes does it take you to reach the closest mobile money agent you often go to for your cash transaction? | ........ |
| Q28 | Which of these do you own and use? | 1. Smart Phones  
2. Laptop PC  
3. Tablet Computer  
4. Car  
5. All  
6. None |
| Q29 | How many phones do you use? | ........ |
| Q30 | How many of them are smart phones? | ........ |
| Q31 | How often do you buy airtime via mobile money in a week? | 1. As often as I need it  
2. Often  
3. Quite Often  
4. Rarely  
5. Never |
| Q32 | How much airtime do you purchase in a week? |
| Q33 | Do you cook regularly? | 1. Yes  
2. No |
| Q34 | If no, how do you get food to eat? | 1. I buy food  
2. I eat from friends  
3. I eat food brought from home  
4. I go home to eat  
5. All the above  
6. Other (please specify) …… |
| Q35 | How much do you spend averagely on food and drinks on a weekly basis? |
| Q36 | How much do you spend averagely on entertainment (visiting drama studio and cinemas, clubbing and partying, social media entertainment, etc) in a week? |
| Q37 | How much do you spend averagely on academic materials on a weekly basis? |
| Q38 | How much do you spend on clothes averagely on a monthly basis? |
| Q39 | In total (including other expenses), how much do you spend on a weekly basis? |
| Q40 | Would the number (frequency) of your mobile money transactions change if the closest mobile money agent you often visit was closer or farther? | 1. Yes  
2. No |
| Q41 | How do you rank your self-esteem? | 1. Low  
2. High  
3. Very High |
| Q42 | Do you feel accepted among your friends and in your environment | 1. Yes  
2. No |
| Q43 | Do you have any medical condition that requires special attention or for which regular expenses are made? | 1. Yes  
2. No |
| Q44 | Do you have a budget for spending? | 1. Yes  
2. No |
| Q45 | When you exceed your budget, what do you do? | 1. Borrow from friends  
2. Buy on credit  
3. Call home for money  
4. Other (please specify) ……. |
| Q46 | Have you ever borrowed to spend? | 1. Yes  
2. No |
| Q47 | Do you save? |  |
| Q48 | What percentage of your income do you save on the average in a month? |  |
| Q49 | Where do you save? | 1. In my room  
2. With friends  
3. At the bank  
4. On my mobile money account  
5. Other (please specify)….. |
| Q50 | Do your parents discuss financial management practices with you? | 1. Yes  
2. No |
| Q51 | Do you use automated teller machines (ATMs)? | 1. Yes  
2. No |
| Q52 | Has the use of mobile money affected how often you use automated teller machines (ATMs)? | 1. Yes  
2. No |
| Q53 | Are you engaged in any income earning activity? | 1. Yes  
2. No |
| Q54 | What is your overall receipt or income from which you spend? |  |
| Q55 | Which studentship status do you hold? | 1. Regular  
2. Fee-Paying  
3. Scholarship/Studentship Awardee  
4. Other (please specify) ……. |
Which department(s) are you affiliated to (course majors)? *(Kindly refer to the table and tick courses as are applicable.)*

**PLEASE TICK FROM THE LIST OF DEPARTMENTS, THE TO WHICH YOU ARE AFFILIATED**

<p>| | | | |</p>
<table>
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<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Anaesthesia</td>
<td>17</td>
<td>Chemical Pathology</td>
</tr>
<tr>
<td>2</td>
<td>Anatomy</td>
<td>18</td>
<td>Medical Biochemistry</td>
</tr>
<tr>
<td>3</td>
<td>Physiotherapy</td>
<td>19</td>
<td>Medical Laboratory Sciences</td>
</tr>
<tr>
<td>4</td>
<td>Restorative Dentistry</td>
<td>20</td>
<td>Nutrition and Dietetics</td>
</tr>
<tr>
<td>5</td>
<td>Radiography</td>
<td>21</td>
<td>Pharmacognosy and Herbal Medicine</td>
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<td>6</td>
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<td>22</td>
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<td>Physiology</td>
<td>23</td>
<td>Biomedical Engineering</td>
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<td>8</td>
<td>Mental Health</td>
<td>24</td>
<td>Nutrition and Food Science</td>
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<td>9</td>
<td>Medical Microbiology</td>
<td>25</td>
<td>Biostatistics</td>
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<tr>
<td>10</td>
<td>Pharmaceutics and Microbiology</td>
<td>26</td>
<td>Statistics</td>
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<tr>
<td>-------------------------------</td>
<td>----------------------------------</td>
<td>----------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>64. Music</td>
<td>69. Communication Studies</td>
<td>74. History</td>
<td>79. Teacher Education and Leadership</td>
</tr>
<tr>
<td>65. Archaeology and Heritage Studies</td>
<td>70. Philosophy and Classics</td>
<td>75. Adult Education and Community Development</td>
<td></td>
</tr>
<tr>
<td>66. Political Science</td>
<td>71. Distance Learning</td>
<td>76. Social Work</td>
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<tr>
<td>68. Research, Education and Administration</td>
<td>73. Sociology</td>
<td>78. Community Health</td>
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</table>
Appendix 2: Demographic Characteristics of Respondents

Table A

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
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<tr>
<td>Male</td>
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<td>Female</td>
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<tr>
<td>Total</td>
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Table B

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percent</th>
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<th>Cumulative Percent</th>
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<tbody>
<tr>
<td>16-25</td>
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<td>79.4</td>
<td>79.4</td>
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<tr>
<td>26-35</td>
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<td>19.6</td>
<td>19.6</td>
<td>99.0</td>
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<tr>
<td>36-45</td>
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<tr>
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Table C

<table>
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<th>Level</th>
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<td>.4</td>
<td>80.4</td>
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<td>Graduate Student</td>
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<td>98.8</td>
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<td>Other</td>
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Table D

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<tr>
<th>Marital Status</th>
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<tr>
<td>No</td>
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### Table E  
**Family Size**

<table>
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<th>Family Size</th>
<th>Frequency</th>
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<td>99.8</td>
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### Table F  
**Parent-guardian Educ. Status**

<table>
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<th>Cumulative Percent</th>
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<td>93.7</td>
<td>93.7</td>
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<tr>
<td>Valid</td>
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### Table G  Parent’s highest level of educational attainment

<table>
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<td>SHS/Post-</td>
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<td>35.9</td>
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<td>Secondary/Diploma</td>
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<tr>
<td>diploma/Masters/PHD</td>
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<td></td>
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<tr>
<td>Total</td>
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<tr>
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### Table H  Financial management discuss

<table>
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<tr>
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<th>Valid Percent</th>
<th>Cumulative Percent</th>
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<td>61.3</td>
<td>61.3</td>
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<tr>
<td>No</td>
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### Table I  Place of saving

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>in my room</td>
<td>39</td>
<td>7.7</td>
<td>9.8</td>
<td>9.8</td>
</tr>
<tr>
<td>with friends</td>
<td>3</td>
<td>.6</td>
<td>.8</td>
<td>10.6</td>
</tr>
<tr>
<td>at the bank</td>
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<td>62.6</td>
<td>79.6</td>
<td>90.2</td>
</tr>
<tr>
<td>on my mobile money account</td>
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<td>5.8</td>
<td>96.0</td>
</tr>
<tr>
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<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>398</td>
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<td>100.0</td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>506</td>
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<td></td>
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</tbody>
</table>
### Table J: Studentship status

<table>
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<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular</td>
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<td>88.1</td>
<td>88.1</td>
<td>88.1</td>
</tr>
<tr>
<td>fee-paying</td>
<td>40</td>
<td>7.9</td>
<td>7.9</td>
<td>96.0</td>
</tr>
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<td>scholarship or studentship awardee</td>
<td>11</td>
<td>2.2</td>
<td>2.2</td>
<td>98.2</td>
</tr>
<tr>
<td>Other</td>
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<td>1.8</td>
<td>1.8</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>506</td>
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</table>

### Table K: Family background rating

<table>
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<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>14</td>
<td>2.8</td>
<td>2.8</td>
<td>2.8</td>
</tr>
<tr>
<td>middle income</td>
<td>394</td>
<td>77.9</td>
<td>77.9</td>
<td>80.6</td>
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<td>Rich</td>
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<td>19.4</td>
<td>19.4</td>
<td>100.0</td>
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<tr>
<td>Total</td>
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### Table L: MM accessibility

<table>
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<th>Cumulative Percent</th>
</tr>
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<tr>
<td>yes</td>
<td>226</td>
<td>44.7</td>
<td>44.7</td>
<td>44.7</td>
</tr>
<tr>
<td>no</td>
<td>280</td>
<td>55.3</td>
<td>55.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>506</td>
<td>100.0</td>
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### Table M: MM service used

<table>
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<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airtel money</td>
<td>18</td>
<td>3.6</td>
<td>8.0</td>
<td>8.0</td>
</tr>
<tr>
<td>Tigo cash</td>
<td>73</td>
<td>14.4</td>
<td>32.3</td>
<td>40.3</td>
</tr>
<tr>
<td>MTN mobile money</td>
<td>135</td>
<td>26.7</td>
<td>59.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>226</td>
<td>44.7</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>System</td>
<td>280</td>
<td>55.3</td>
<td></td>
</tr>
<tr>
<td>Reason for keeping an MM account</td>
<td>Frequency</td>
<td>Percent</td>
<td>Valid Percent</td>
<td>Cumulative Percent</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----------</td>
<td>---------</td>
<td>---------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>to receive money conveniently</td>
<td>105</td>
<td>20.8</td>
<td>46.5</td>
<td>46.5</td>
</tr>
<tr>
<td>to save conveniently</td>
<td>11</td>
<td>2.2</td>
<td>4.9</td>
<td>51.3</td>
</tr>
<tr>
<td>to buy airtime conveniently</td>
<td>30</td>
<td>5.9</td>
<td>13.3</td>
<td>64.6</td>
</tr>
<tr>
<td>have access to my money at all times</td>
<td>73</td>
<td>14.4</td>
<td>32.3</td>
<td>96.9</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>1.4</td>
<td>3.1</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>226</td>
<td>44.7</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Amount received from parents</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>11</td>
<td>2.2</td>
<td>6.4</td>
<td>6.4</td>
</tr>
<tr>
<td>70</td>
<td>1</td>
<td>.2</td>
<td>.6</td>
<td>7.0</td>
</tr>
<tr>
<td>100</td>
<td>37</td>
<td>7.3</td>
<td>21.5</td>
<td>28.5</td>
</tr>
<tr>
<td>110</td>
<td>2</td>
<td>.4</td>
<td>1.2</td>
<td>29.7</td>
</tr>
<tr>
<td>120</td>
<td>2</td>
<td>.4</td>
<td>1.2</td>
<td>30.8</td>
</tr>
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<td>.2</td>
<td>.6</td>
<td>31.4</td>
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<tr>
<td>150</td>
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<td>4.7</td>
<td>14.0</td>
<td>45.3</td>
</tr>
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<td>160</td>
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<td>.4</td>
<td>1.2</td>
<td>46.5</td>
</tr>
<tr>
<td>170</td>
<td>2</td>
<td>.4</td>
<td>1.2</td>
<td>47.7</td>
</tr>
<tr>
<td>Total</td>
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<td>2</td>
<td></td>
<td>48.8</td>
</tr>
<tr>
<td>200</td>
<td>48</td>
<td>9.5</td>
<td>27.9</td>
<td>76.7</td>
</tr>
<tr>
<td>250</td>
<td>4</td>
<td>.8</td>
<td>2.3</td>
<td>79.1</td>
</tr>
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<td>2.2</td>
<td>6.4</td>
<td>85.5</td>
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<tr>
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<td>1.8</td>
<td>5.2</td>
<td>90.7</td>
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<tr>
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<td>1.6</td>
<td>4.7</td>
<td>95.3</td>
</tr>
<tr>
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<td>.2</td>
<td>.6</td>
<td>95.9</td>
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<td>.4</td>
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<td>97.1</td>
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<tr>
<td>1000</td>
<td>5</td>
<td>1.0</td>
<td>2.9</td>
<td>100.0</td>
</tr>
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<td>Total</td>
<td>172</td>
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<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
### Table P  
*Ever received money from others other than parents*

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>299</td>
<td>59.1</td>
<td>59.1</td>
</tr>
<tr>
<td>No</td>
<td>207</td>
<td>40.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>506</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

### Table Q  
*Still receive from others via MM*

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>166</td>
<td>32.8</td>
<td>32.8</td>
</tr>
<tr>
<td>No</td>
<td>340</td>
<td>67.2</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>506</td>
<td>100.0</td>
<td>100.0</td>
</tr>
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</table>

### Table R  
*Frequency of receiving money from others via MM*

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>weekly</td>
<td>8</td>
<td>1.6</td>
<td>4.8</td>
</tr>
<tr>
<td>every two weeks</td>
<td>18</td>
<td>3.6</td>
<td>10.8</td>
</tr>
<tr>
<td>monthly</td>
<td>60</td>
<td>11.9</td>
<td>36.1</td>
</tr>
<tr>
<td>Other</td>
<td>80</td>
<td>15.8</td>
<td>48.2</td>
</tr>
<tr>
<td>Total</td>
<td>166</td>
<td>32.8</td>
<td>100.0</td>
</tr>
<tr>
<td>Missing System</td>
<td>340</td>
<td>67.2</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>506</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

### Table S  
*Ever sent money via MM*

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>Yes</td>
<td>281</td>
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</tr>
<tr>
<td></td>
<td>No</td>
<td>225</td>
<td>44.5</td>
</tr>
<tr>
<td>Total</td>
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<td>506</td>
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</table>
### Table T  Average amount received from other senders

<table>
<thead>
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<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>16</td>
<td>3.2</td>
<td>9.6</td>
</tr>
<tr>
<td>30</td>
<td>8</td>
<td>1.6</td>
<td>4.8</td>
</tr>
<tr>
<td>40</td>
<td>3</td>
<td>.6</td>
<td>1.8</td>
</tr>
<tr>
<td>50</td>
<td>47</td>
<td>9.3</td>
<td>28.3</td>
</tr>
<tr>
<td>60</td>
<td>2</td>
<td>.4</td>
<td>1.2</td>
</tr>
<tr>
<td>70</td>
<td>5</td>
<td>1.0</td>
<td>3.0</td>
</tr>
<tr>
<td>80</td>
<td>1</td>
<td>.2</td>
<td>.6</td>
</tr>
<tr>
<td>100</td>
<td>46</td>
<td>9.1</td>
<td>27.7</td>
</tr>
<tr>
<td>Valid</td>
<td>120</td>
<td>1</td>
<td>.2</td>
</tr>
<tr>
<td>150</td>
<td>5</td>
<td>1.0</td>
<td>3.0</td>
</tr>
<tr>
<td>180</td>
<td>1</td>
<td>.2</td>
<td>.6</td>
</tr>
<tr>
<td>200</td>
<td>16</td>
<td>3.2</td>
<td>9.6</td>
</tr>
<tr>
<td>300</td>
<td>5</td>
<td>1.0</td>
<td>3.0</td>
</tr>
<tr>
<td>350</td>
<td>2</td>
<td>.4</td>
<td>1.2</td>
</tr>
<tr>
<td>400</td>
<td>2</td>
<td>.4</td>
<td>1.2</td>
</tr>
<tr>
<td>500</td>
<td>6</td>
<td>1.2</td>
<td>3.6</td>
</tr>
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<td>Total</td>
<td>166</td>
<td>32.8</td>
<td>100.0</td>
</tr>
<tr>
<td>Missing System</td>
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<td>67.2</td>
<td></td>
</tr>
<tr>
<td>Total</td>
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<td>100.0</td>
<td>100.0</td>
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### Table U  Still send money via mobile money

<table>
<thead>
<tr>
<th></th>
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<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
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<td>39.5</td>
<td>39.5</td>
<td>39.5</td>
</tr>
<tr>
<td>Valid No</td>
<td>306</td>
<td>60.5</td>
<td>60.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>506</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
### Table V

**Frequency of sending money via MM**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>more than once a week</td>
<td>6</td>
<td>1.2</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Weekly</td>
<td>16</td>
<td>3.2</td>
<td>8.0</td>
<td>11.0</td>
</tr>
<tr>
<td>every two weeks</td>
<td>9</td>
<td>1.8</td>
<td>4.5</td>
<td>15.5</td>
</tr>
<tr>
<td>Monthly</td>
<td>72</td>
<td>14.2</td>
<td>36.0</td>
<td>51.5</td>
</tr>
<tr>
<td>Other</td>
<td>97</td>
<td>19.2</td>
<td>48.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>39.5</td>
<td></td>
<td>100.0</td>
</tr>
</tbody>
</table>

| Missing System               | 306       | 60.5    |               |                    |
| Total                         | 506       | 100.0   |               |                    |

### Table W

**Average amount sent**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>21</td>
<td>4.2</td>
<td>10.5</td>
<td>10.5</td>
</tr>
<tr>
<td>30</td>
<td>13</td>
<td>2.6</td>
<td>6.5</td>
<td>17.0</td>
</tr>
<tr>
<td>40</td>
<td>2</td>
<td>.4</td>
<td>1.0</td>
<td>18.0</td>
</tr>
<tr>
<td>50</td>
<td>61</td>
<td>12.1</td>
<td>30.5</td>
<td>48.5</td>
</tr>
<tr>
<td>60</td>
<td>1</td>
<td>.2</td>
<td>.5</td>
<td>49.0</td>
</tr>
<tr>
<td>100</td>
<td>59</td>
<td>11.7</td>
<td>29.5</td>
<td>78.5</td>
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<tr>
<td>120</td>
<td>1</td>
<td>.2</td>
<td>.5</td>
<td>79.0</td>
</tr>
<tr>
<td>150</td>
<td>8</td>
<td>1.6</td>
<td>4.0</td>
<td>83.0</td>
</tr>
<tr>
<td>200</td>
<td>23</td>
<td>4.5</td>
<td>11.5</td>
<td>94.5</td>
</tr>
<tr>
<td>300</td>
<td>8</td>
<td>1.6</td>
<td>4.0</td>
<td>98.5</td>
</tr>
<tr>
<td>400</td>
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<td>.2</td>
<td>.5</td>
<td>99.0</td>
</tr>
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<td>450</td>
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<td>.2</td>
<td>.5</td>
<td>99.5</td>
</tr>
<tr>
<td>500</td>
<td>1</td>
<td>.2</td>
<td>.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>39.5</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

| Missing System               | 306       | 60.5    |               |                    |
| Total                         | 506       | 100.0   |               |                    |
Table X

<table>
<thead>
<tr>
<th>Proximity to MM agent?</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
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<tbody>
<tr>
<td>less than 5 minutes</td>
<td>173</td>
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<td>34.2</td>
<td>34.2</td>
</tr>
<tr>
<td>5-10 minutes</td>
<td>145</td>
<td>28.7</td>
<td>28.7</td>
<td>62.8</td>
</tr>
<tr>
<td>10-20 minutes</td>
<td>103</td>
<td>20.4</td>
<td>20.4</td>
<td>83.2</td>
</tr>
<tr>
<td>20-30 minutes</td>
<td>58</td>
<td>11.5</td>
<td>11.5</td>
<td>94.7</td>
</tr>
<tr>
<td>30 minutes or more</td>
<td>27</td>
<td>5.3</td>
<td>5.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>506</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table Y

<table>
<thead>
<tr>
<th>Real wealth</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>smart phones</td>
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<td>19.8</td>
<td>19.8</td>
<td>19.8</td>
</tr>
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<td>laptop PC</td>
<td>28</td>
<td>5.5</td>
<td>5.5</td>
<td>25.3</td>
</tr>
<tr>
<td>tablet computer</td>
<td>4</td>
<td>.8</td>
<td>.8</td>
<td>26.1</td>
</tr>
<tr>
<td>Car</td>
<td>3</td>
<td>.6</td>
<td>.6</td>
<td>26.7</td>
</tr>
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| Missing   | System    | 140     | 27.7          |                    |
| Total     | 506       | 100.0   |               |                    |

### Table AJ  Monthly expenditure on academic materials

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Monthly expenditure on clothes

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Mean VIF | 1.26
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xl