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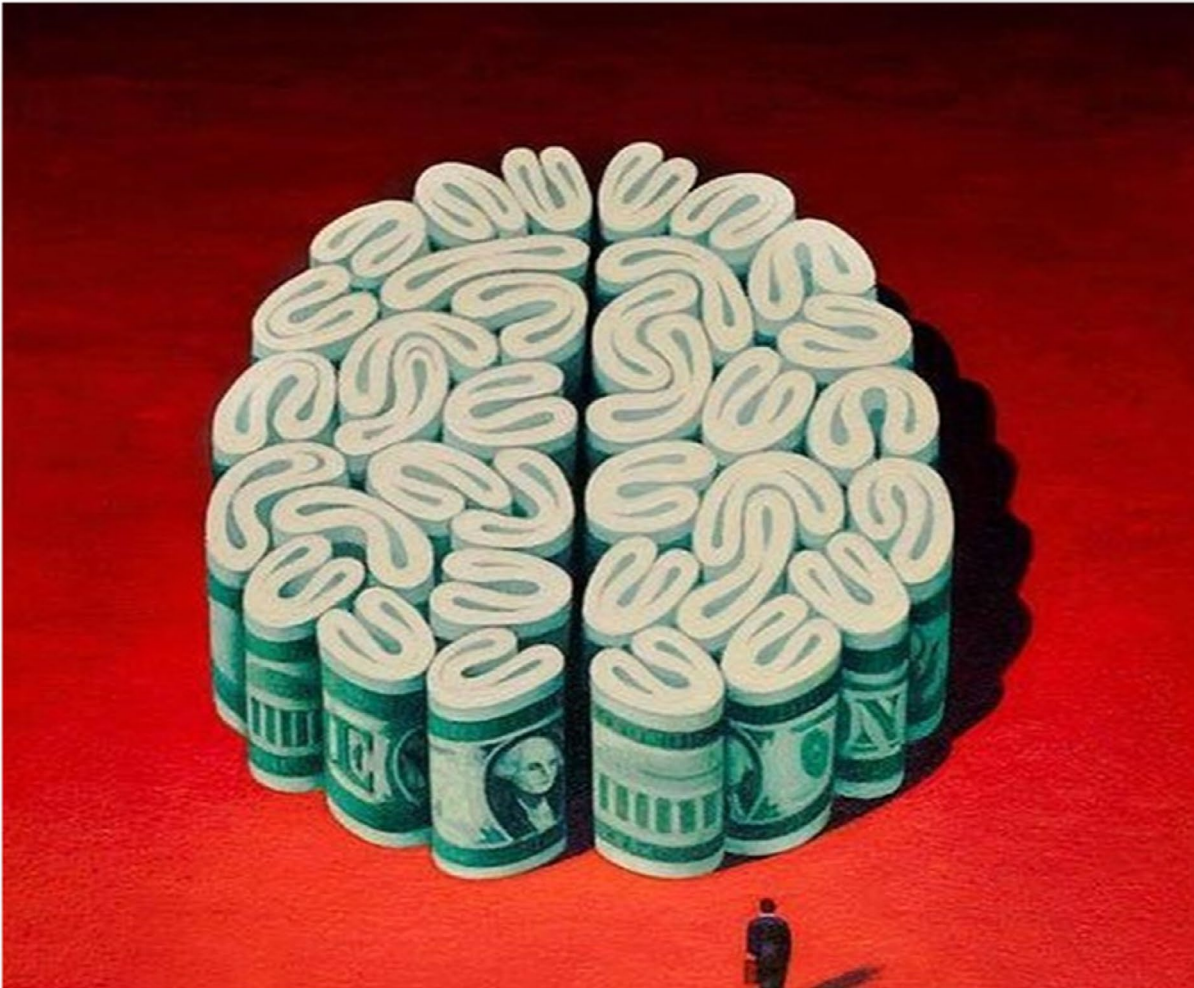
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GENERAL & APPLIED ECONOMICS | RESEARCH ARTICLE

Mental budgeting and the financial management of small and medium entrepreneurs

Mohammed Ziaul Hoque^{1*}

Abstract: The present study examines the influences of mental budgeting on the financial management of SMEs, via a survey of SME owners' practices regarding various issues in financial management. The samples of 201 SMEs were randomly selected from the city of Chittagong, Bangladesh and interviewed using a structured questionnaire and the data have been analysed using descriptive statistics, principal component analysis and ordinal logistic regression. The results of the study show that own savings and loans from relatives are the major sources of the business capital with micro-credit coming in the second place. The earnings from existing business were mostly used to meet family expenditures. The results also show that Mental Budgeting (MB) and its determinants like other sources of income over existing business, never spending more than a fixed amount, having an overview of checking balance, long-term future orientation and financial product knowledge have significant influences on the financial management of SMEs. However, no evidences of several aspects were found in the same field.

Subjects: South Asian Economics; Behavioral Sciences; Economics, Finance, Business & Industry

Keywords: mental accounting; mental budgeting; financial management; SMEs; behavioural finance; effects

ABOUT THE AUTHOR



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Mohammed Ziaul Hoque has studied MSc in Consumers Studies with the Economics of Consumers and Household group at Wageningen University, Netherlands and Master in Business Administration in Finance at University of Chittagong, Bangladesh. The Consumers, Behavioural and Institutional Economics are his research field where the area of interest is to foster policy innovations focusing research techniques of Consumers and Behavioural Economics. He is the author of the textbook of Introduction to Business and Principles of Finance, and his research has already been published with the Springer and IGI Global. Currently, he is looking for an innovative direction to strengthening the effectiveness of policy by examining the impact of behavioural and demand insights that nudge consumers into beneficial directions in choices. The analysis of consumer preferences for focusing on the short span, neglect of the future, the importance of the present situation etc. from this research, will help in analysing peoples' behaviour that can help to formulate effective policies.

PUBLIC INTEREST STATEMENT

Mental Budgeting (MB) is shown in business owners' tendency to classify their finances and resources based on the aim of income utilization. MB helps to keep track of spending in different accounts, categorization, evaluation of financial decisions and the financial management (FM) of business firms. But the practice of MB in small and medium enterprise (SME) is limited. However, no evidence exists showing how MB is applied in the financial management of SMEs. Within this project, we will investigate the impacts of MB in performance of SMEs, money management attitude, knowledge about financial products, the overall expenses of SMEs and provide policy issues for better financial management. Furthermore, entrepreneurs' sources of income, never spending more than a fixed amount, long-term time orientation, long-term investment orientation, and perceptions and behaviour of checking balance will also be considered, which will help to formulate effective FM policy of SMEs.

1. Introduction

We are living in a world in which Small and Medium Enterprises (SMEs) are a fundamental part of an economy as they play a vital role in furthering growth, innovation and prosperity (Dalberg, 2011) and, contribute up to 33% of GDP in emerging economies (World Bank, 2015). SME owners/managers make decisions ranging from acquiring funding to investments in the business. Unfortunately, they often make mistakes in management. The reason is that, as human beings, most entrepreneurs are vulnerable to various biases that can lead them astray. Their mistakes may make them uncertain in optimal decision-making. SME performance may be driven by bad decisions concerning fund collection, allocation, savings, consumption, mortgages and even risk assessment and control. Because of human errors, insights from Behavioural Finance (BF) are required to make decisions more effective. BF examines financial phenomena through economic and cognitive psychology (Pompian, 2006).

Mental Accounting (MA) is a key concept in BF that may include both the effects of human behaviour on the way accounting models are constructed and the effects of the way accounting models are constructed on human behaviour. Mental Budgeting (MB) is consistent with research on mental accounting (Henderson & Peterson, 1992; Kahneman & Tversky, 1984) that demonstrates that people use resources differently based on how they are labelled. Generally, MB is shown in business owners' tendency to classify their finances and resources based on subjective criteria, such as funding sources and the aim of income utilization. People may keep their budget concerning one category of expenses mentally separated from another category. For instance, the budget for weekly food expenditures is kept mentally separated from the weekly entertainment budget or monthly clothing budget (Heath & Soll, 1996). This example of mental accounting shows that mental budgets are linked to the purpose of the saving and the spending of money (Antonides, de Groot, & van Raaij, 2011). MB includes coding, categorization and evaluation of financial decisions (Pompian, 2006) and is used to keep track of spending in different accounts. Consumers' total budgets are segmented into separate mental accounts (Heath & Soll, 1996) and then expenses are tracked against the budgets.

SMEs are a fundamental part of the economic structure in developing countries (Dalberg, 2011). For instance, to promote economic development and growth, Bangladesh Government has emphasized the rapid growth of SMEs. The motivation behind this is that SMEs have a significant role in employment generation, poverty reduction, and overall economic growth, especially for a developing economy like Bangladesh (Akterujjaman, 2010). In the process of SME sector development, Financial Management (FM) of SME owners is crucial (World Bank, 2015) and insights from BF may help them behave rationally and make decisions more effectively (McMahon, 2002). On the other hand, "as a part of BF, most of the cases, MB has been investigated mainly in the laboratory, little insight has been gained into what type of people use mental accounting, under what circumstances, and how mental accounting is related to managing business finance" (Antonides et al., 2011).

Atkinson, McKay, Kempson, and Collard (2006) found that managing money is one of the most important factors in financial capability and to make ends meet and in keeping track of expenses. Spending behaviour is an important domain of household economic decision-making (Ferber, 1973). Thaler (1999) in his study states that little BF research has been done in the field of FM. However, no evidence exists showing how MB is applied in the FM of SMEs. The latter problem and knowledge gap motivate to carry out the present study among SME owners to study the relationship between MB and FM affairs.

Thus, the objective of the study is to provide help in the FM of SMEs by investigating the effect of the MB on the FM of SMEs and the subsequent policy implications. Therefore, the key research question is: What are the effects of MB of SMEs on their FM? In doing so, the study also aims at examining the characteristics of entrepreneurs, their income and expenditure patterns, money management attitude, knowledge about financial products, the financial performance of SMEs and overall expenses of SMEs, for better FM. To achieve the above objectives, the study answered the following specific research questions. What are the characteristics of enterprises in the study areas? What are the major sources of income and expenditure of the owners of SMEs? What factors of MB influence the FM of SMEs? What policy issues help the FM of SMEs?

Human characteristics affect the decisions human beings make. For every entrepreneur, decision-making is important. Literature reports that as human beings, most entrepreneurs are vulnerable to various biases that can lead them off target (Ritter, 2003). Studying MB may help people understand how their decision-making displays a number of psychological shortcomings. To overcome those psychological shortcomings, entrepreneurs can benefit from a better understanding of behavioural heuristics and cognitive biases. Thus, research on MB can be used to improve subjective welfare and happiness of entrepreneurs. The literature shows that MB can influence judgement and decision-making of people. If a particular budget becomes exhausted at the end of a period, people say they would spend less within that particular category (Heath & Soll, 1996).

The present study uses a questionnaire designed to elicit information on personal views and choices made concerning FM of SME owners. A questionnaire has been presented to 201 SME owners in the city of Chittagong; Bangladesh who borrowed from an international Micro Finance Institution named Bangladesh Rural Advancement Committee (BRAC). Respondents have been selected randomly based on the direction and reference from the branch manager of BRAC. The questionnaire contains basic information of respondents, mental budgeting scale,¹ overview scale, financial management scale, short- and long-term future orientation scale and the financial products knowledge scale. The results show that MB and its determinants like other sources of income over existing business, never spending more than a fixed amount, having an overview of checking balance, long-term future orientation and financial product knowledge have significant influence on the FM of SMEs.

This study is organized in the following way. Section 2 provides the theory regarding MB and decision-making in the FM of SMEs and potential explanations from BF. Section 3 describes the data and method of the study. Section 4 reports the results and the analysis of possible determinants of MB and the effects of MB on SMEs' FM. The study will then describe the MB scale and the survey, and report empirical results. Section 5 concludes with a discussion and the recommendations for further research.

2. Theory

2.1. Financial management

By the end of the 1970s, a growing dissatisfaction emerged with the state of Modern Finance Theory (McMahon, 2002). Today's standard finance is so weighted down with anomalies that reconstructing financial theory along behavioural lines makes much sense (Statman, 1999). These anomalies encouraged academics to have a closer look at economic psychology to explain human behaviour and the effects on financial decision-making. De Bondt and Thaler (1995) have said that the problems with modern finance theory are created by its accepted dual principle that characterizes the best choice but describes actual choice. The solution is to retain the normative status of an optimization (say, expected utility theory and Bayes' rule) and develop explicitly descriptive models of behaviour in markets and organizations. We can call this effort BF (McMahon, 2002).

2.2. Behavioural finance

BF focuses on main aspects of human behaviour like decision-making, problem-solving and self-regulation of behaviour (Baron, 2004). It also considers how individuals make sense of the environment in which they exist. BF has been defined as the study of how financial practitioners act and interacts with financial information and the successive effects on markets (McMahon, 2002). In a review article on BF, Thaler (1999) discussed that most of the research so far has been in the field of asset pricing; much less has been done on FM. Heaton (2002) has indicated that a little work in FM has dropped the assumption that managers are fully rational. Thus, while a start has been made, there still seem to be the need for re-examining the challenges of FM through the new perspectives (decision-making heuristics and cognitive biases) offered by BF. Forbes (2009) has stated that the behavioural tradition improves peoples' understanding by incorporating at least three elements of psychological insights into FM decisions; say the presence of biases in investors' decision-making, the use of mental frames to simplify data used in decision-making and the presence of time inconsistency in choice.

2.3. Mental budgeting (MB)

Thaler (1985, 1999) matches MB with the accounting process used by firms and the cognitive processes used by individuals. He defines MB as the set of cognitive operations used by individuals to label code and evaluate financial behaviour. He has also established an economic concept which contends that individuals divide their current and future assets into separate and non-transferable portions. Therefore, the MB theory reveals that individuals weight diverse levels of utility to each portfolio of the asset, which affects their spending decisions and other behaviours as well. Charupat and Deaves (2003) argue MB has enormous consequences in everyday life that affect how people think about spending money and how they save money for the future.

People sometimes separate their decisions that should be combined for better management and control. Ritter (2003) gives an example of mental accounting illustrating how people can create separate accounts. “John” and “Megan”, a nice couple, have a household budget for the food and entertaining. At home, when they follow the food budget, they will not eat expensive food. But when they follow the entertainment budget in a restaurant, usually, they will order expensive food where the cost is much higher than the foodstuff at home. “They could have saved money if they ate the same food in a restaurant than at home” (Ritter, 2003). He also added that people are more careful with the money they earn than with the money they get easily. The consequence of this practice is that individuals will tend to be too conservative with certain investments or spending and too irresponsible with others (Charupat & Deaves, 2003). Thaler (1985), who first introduced how MB works, illustrated that SME owners treat money for different things differently and can avoid the mental accounting biases. Phung (2005) found that in avoiding the mental accounting bias it is key to realizing that money is fungible regardless of its origins or intended use. Moreover, he believes that entrepreneurs should be aware of the MB bias as it will influence the way they care for money.

MB theory includes several aspects, which are all based on the mental separation of economic categories. These aspects are hedonic editing, categorization of gains and losses (receiving and paying money), earmarking and labelling of income and assets, simultaneous borrowing and saving and mental budgeting (Antonides et al., 2011). At present, down and upside protection from scarcity and availability are included in the MB concept. The following sections contain a short description of these mental accounting aspects.

2.3.1. Hedonic editing

Hedonic editing or hedonic framing means the evaluation of gain and loss combinations experienced by individuals (Antonides et al., 2011). People are not uniform in their tolerance for risk and they mentally split up the flows of income. For example, people prefer spending from dividends but not the capital gains. They may do this to assert self-control. Hedonic editing rules have been developed by Thaler (1985) based on the asymmetric value function for gains and losses in prospect theory. He found that segregation of gains was preferred to integration and the integration of losses was preferred to segregation. However, Thaler and Johnson (1990) showed that the hedonic editing rules were only partly applied if gains and losses occurred at different points in time (in Antonides et al., 2011).

2.3.2. Categorization of gains and losses

In the financial accounting, gains and losses are separated due to profit maximization. For instance, capital gains and losses should be separated from other types of gains and losses for two reasons: (1) Long-term capital gains may be taxed at a lower rate than ordinary gains and (2) a net capital loss is deductible (IFRS-9).² Again, in the mental accounting, gains and losses are categorized to get the real insights of value that help for better control and management. For example, buying a ticket for a play is more easily classified into the entertainment category than buying an expensive bottle of wine, since the play is more typical of the entertainment category than the wine (Heath & Soll, 1996).

2.3.3. *Earmarking and labelling of income and assets*

Most of the financial institutions often earmark and label their income and assets, for instance, funds received from bond issuances to pay for certain projects. A state may issue treasury bonds, and then earmark the funds received from the bonds' sales to pay for a project such as a new road or bridge. In the mental accounting, income is labelled as belonging to either a current account or capital account or future income account that is associated with different marginal propensity to consume (Shefrin & Thaler, 1988). The current account leads to relatively high consumption, and the future income account to relatively low consumption (Antonides et al., 2011). Bonus money is spent more easily than income framed as a rebate (Epley, Mak, & Idson, 2006). Kooreman (2000), in his research, found that spending on children's clothing was more sensitive to changes in child allowances than other income sources.

2.3.4. *Simultaneous borrowing and saving*

In the case of money labelling for particular spending or saving categories, mental budgeting differs from economic budgeting. In mental budgeting, the budgets reserved for expenditure or saving are considered obligatory (Heath & Soll, 1996). This process of budgeting has several consequences for SME owners' financial behaviour. Firstly, labelling money for particular spending categories may lead to both over spending and under spending (Heath & Soll, 1996). If a category budget is set too high (low), the owner is likely to spend too much (little) of that category (Antonides et al., 2011). Evidence shows that previous expenditures within a category tend to decrease the likelihood of further spending within that category (Antonides et al., 2011). MB thus avoids negative balances within a particular budget. Secondly, labelling income for saving or spending may explain the so-called debt puzzle (Gross & Souleles, 2002; Katona, 1975; Laibson, Repetto, & Tobacman, 2003) that many people simultaneously borrow money at quite high-interest rates and save money at substantially lower interest rates (Thaler, 1985). Karna (2009) showed that agents who simultaneously save and borrow can have higher lifetime welfare than those who do not. An alternative explanation for simultaneous borrowing and saving is hyperbolic discounting (Laibson et al., 2003) in which consumers who are highly impatient for immediate consumption engage in credit taking. At the same time, they can protect their future consumption by engaging in illiquid saving.

2.3.5. *Downside and upside protection*

Behavioural investors start the process of constructing behavioural portfolios by dividing their portfolio into mental accounts (Statman, 2014). One mental account can be a "downside protection" mental account. This type of mental account is designed for protection from scarcity. Another one may be an "upside potential" mental account that is designed for a chance at resources. Investors should behave on the downside protection mental account as if they are risk-averse. On the other hand, investors should behave in the upside potential mental account as if they are risk-seeking. In both types of mental account, the risk is measured by the standard deviation of returns. Generally, the downside protection mental account would be composed of diversified shares and bonds, perhaps traditional mutual funds (not financial derivative) and the upside of an undiversified portfolio of shares or aggressive mutual funds. The present study uses a MB scale in an attempt to clarify MB by several socio-demographic and psychological variables.

2.4. *Financial management of SMEs*

For SME owners' FM is a crucial aspect of their business. It is established that that anyone who owns or manages a small business needs to be armed with the financial know-how to keep his business running effectively. A key concern for SME owners is cash flow management, more specifically the cash conversion cycle. A good FM system can protect the liquidity problem of SMEs and is vital to the economic health of SME businesses in a country (Brigham & Ehrhardt, 2005). That is why FM system should be understood in the shaping and reshaping of economic world. When the financial objective of SME is considered from a BF perspective, can becomes more effective. Under BF perspective, the risk-return relationship of normative FM is distorted by the influence of decision-making heuristics and cognitive biases. Thus, the framing heuristic and biases such as mental accounting and loss aversion can play an important role in making a FM decision (McMahon, 2002). For instance, owner/

manager perceptions of both business risk and financial risk may be reduced by overconfidence, excessive optimism and illusion of control. Lowered risk perceptions may lead to a lowering of expected return.

By nature, people employ several techniques to hold a particular behaviour. One widely accepted common technique is to give oneself specific allowances for the behaviour and these allowances are mental budgets. We find many practical examples in which people use mental budgets in hopes of controlling their behaviour in the laboratory. For instance, in the weight watchers programme, each food item is allocated a point value. Then members are encouraged to limit their total daily consumption to a pre-specified number of points (for example, a weight gained man gives herself an allowance of two desserts a week). The agents can apply the same concept in the field of small business' FM. The present study aims to examine if the mental budget can aid self-control of SME owners in their FM. While the study reassesses the question of whether MB influences FM of SMEs, it does not look at all aspects of MB, but at some selected features of mental accounting instead. The relationship between MB and FM and the problems in the FM of SMEs are explored in the analysis. The answer to the research questions and policy recommendations to manage these problems are the conclusion of this study.

3. Data and methods

The present study is based on Chittagong urban area. Chittagong is the chief port (business hub) and the commercial and manufacturing centre of Bangladesh. Primary data have been collected from the study area by presenting a structured questionnaire. A sample of 201 SME owners was selected to measure the effects of MB on the FM of SMEs. The questionnaire was submitted to the respondents to be filled in with a face to face interview. The data were collected by employing structured questionnaire that was administered by the researcher on various socio-economic characteristics of SME owners and their MB perception and practices.

The SME owners who borrowed from BRAC, under the project "Progoti,"³ were sampled from different sub-areas. To collect the representative sample, stratified and clustered random sampling procedures were employed. More than 90% of total borrowers have been living in the 15 administrative areas. Therefore, these 15 areas were considered to select the respondents. The participants have been selected from these 15 clusters with the help of BRAC's branch manager. Managers have provided the addresses and the contact numbers of respondents and asked them to participate in the interview. The reason to use the reference of the branch manager is that without the managers' recommendations, borrowers might not be interested in participating in the survey. The sampling distribution of the 15 clusters is as follows: Chandgaon (7),⁴ Mohara (9), Bakolia (7), Kotwali (15), Pathorghata (9), Karnafully (15), Panchlaish (15), Lalkhan Bazar (20), Cornel Hat (36), Bandor (13), Pahartali (12), Halishahor (7), Doublemooring (10), Madarbari (14), Firingibazar (12).

The fieldwork was carried out in the period from 01 to 26 November 2014. Before the final version of the survey, a pre-test survey was conducted in the same city. The interview on an average took 20 min per interviewee. The questionnaire consists of five sections. Section one covers basic information about entrepreneur and enterprise characteristics, section two includes MB scale and section three overview scale, section four covers FM scale, section five deals with short-term future orientation scale, and section six covers long-term future orientation scale. The last section was about financial products knowledge scale. These scale-based questions dealt with the evaluation on the basis of six-point preference scales ("strongly disagree" to "strongly agree").

The analysis is based on descriptive statistics, principal component analysis (PCA) and ordinal regression analysis (ORA). Descriptive statistical tools were used to study SMEs characteristics and their current status. This analysis is intended to provide some insight into the importance of various characteristics and socio-economic factors related to income and expenditures with SMEs FM. The theoretical framework and methodology of the study have laid a foundation for the discussion of descriptive statistics and empirical analyses. Statistics include mean, standard deviation, variance,

Table 1. Mental budgeting scale

No. of items	Factors	Cronbach alpha
05	Reserving money for different expenses	0.75
04	Never spending more than a fixed amount	0.76
02	Spending on one thing and economizing on others	0.65
02	Spending less in the next month after spending this month	0.86

Source: Own survey, 2014

range, skewness and kurtosis. The cross-tabulation was used to compare SMEs and the PCA was used for a grouping of a large number of variables into a small number of factors then scale construction. The PCA has also established a linear combination of MB and FM variables so that the maximum variance is extracted from the variables. Moreover, PCA was used to explain the statement of SME owners’ financial affairs, the temptation to buy without having the money for it, paying bills in time, preference for paying on credit rather than paying from savings etc. Finally, ordinal regression models were used to find out the determinants of MB of SMEs that have the effect on FM.

3.1. Measures and questionnaire

For the strong intercorrelations, a sample size of 150 observations should be sufficient to obtain an accurate solution in exploratory factor analysis (Guadagnoli & Velicer, 1988). Again, for confirmatory factor analysis, a minimum sample size of 100 is recommended (Bollen, 1989). The respondents were 201 so; these minimums are satisfied in the current study. The different questions were loaded into a component variable since all had individual loadings higher than 0.60. Reliability was tested with Cronbach’s alpha. The cut-off rate of Cronbach’s alpha was set at 0.70. For most of the questions, except the third factor of MB scale (Table 1), the results indicate relatively a good level of internal consistency for the scales with 201 respondents.

Section 1 of the questionnaire includes basic information on entrepreneurs like location and status of business, experiences of doing business, amount of loan and spending the income of business for household management. It also includes other sources of income, performance and future plans of existing business. Furthermore, questions were asked on socio-demographics and a number of opinions and attitudes concerning financial behaviour. In the second section, a MB scale was constructed to capture the idea of mental separation of expenditure categories, allocated budgets for categories of expenses, economizing in spending and economizing in the next period (week, month etc.) after spending the current month (Antonides et al., 2011). Here the independent variable (IV), MB is associated with the use and not the source of firm’s money. The MB scale consisted of 18 items, each answered on a six-point Likert Scale. The 18 MB items were considered such that higher scores refer to higher levels of mental budgeting.

The Cronbach alpha for overall MB scale is 0.77. A PCA of the 18 items resulted in four factors labelled “mental budgeting” explaining 63.59% of the item variance. Then the mean value of four factors was measured to employ as an IV.

In the third section, the survey dealt with many aspects of financial behaviour like how often one checks the balance of current accounts, how precisely one knows this balance and whether one has an outline of expenses (Antonides et al., 2011). These two overview items were considered regarding checking account that together constituted one “overview” scale in PCA. In the fourth section, dependent variable (DV), a FM attitude scale was constructed using the mean value and PCA analysis. This FM scale deals with organizing one’s daily financial affairs to buy things without having the money for it, paying bills on time, and preference for paying on credit rather than paying from savings. The four FM items were recoded such that higher scores refer to higher levels of mental budgeting. Finally, the four FM items regarding financial matters constituted the single scale.

Furthermore, the questionnaire contained two time-orientation scales, each consisting of four items, adapted from Antonides et al. (2011). The short-horizon future orientation scale covered consumer preferences for focusing on the short span, neglecting long run: the importance of the present situation. The PCA analysis considered three items and formed one short-term financial orientation scale. The long-term orientation scale in a PCA dealt with preferences for taking care of the future, long-term investments, saving, and precaution. Three long-term financial orientation items were considered to form a scale. Finally, the questionnaire contained two self-reported financial products knowledge scales. The first one was concerned about financial products (insurance, saving, financial products, taxes, consumer protective rules, and pensions) and the second one dealt with investments (options and bonds, rights, SWAP, shares, the general economy and the financial market) decision. This financial knowledge scale consisted of nine items each answered on a five-point Likert Scale. The PCA analyses have considered six items and labelled those in one named financial products knowledge (Cronbach alpha is 0.81).

4. Results

4.1. Characteristics of SMEs

The sampled firms' capital ranges from 50 thousand to 10 million and the average amount of capital is BDT 175,000 (78.90 BDT = 1 USD). The average number of workers in the enterprises is four. The average amount of loan and duration are BDT 200,000 and one year, respectively (Appendix 1). Almost all the SME owners contribute to household expenditures. The present study also shows that most of the SME owners are not much experienced: 50% of the SME owners have less than 10 years of experience in doing business. Results also reveal that a good number of enterprises are promising in their own field. For example, the 54% of total SME's sales volumes have increased as compared to their previous year sales while 21% of SMEs have no changes in sales (Appendix 2).

As we can see in the Appendix 3, the loan information, among all firms 78% did not borrow from other financial institutions (FIs) except BRAC. Only 21% of firms borrowed from other FIs where the average loan amount was BDT 500,000. Furthermore, only 15% of the samples reported that the interest rate is 27% (true interest rate of BRAC); other SME owners did not know the interest rate. Average interest rate of other sources is 16.24% which is lower than that of BRAC. Fifty-two percent of all SME owners have other sources of income. Seven-eight percent of the owners have the future plan to expand their business through micro-credit (Appendix 5). The sales volume of the firms that borrowed from other FIs is decreasing (Appendix 4).

4.2. Major sources of income and expenditure of SMEs

For 48% of the total SMEs, main income source is their existing business only. Fifty-two percent of SME owners have other sources of income. The results also show that more than 100 SMEs contribute to meet their 100% family expenditures where the average contribution is 76% of their family expenditures. This implies that on average SME owners spend 76% of their income for household expenditures. The interest of loan and payment to the workers are the major items of expenditures.

4.3. Mental budgeting determinants and the financial management of SMEs

To measure the MB factors and other financial affairs that influence the FM of SMEs, a PLUM-ordinal regression analysis is employed. It is a generalised linear model which can be used to predict cumulative probabilities for the categories and we can fit a separate equation for each category of the ordinal DV. The model is based on the assumption that there is a latent continuous outcome variable and that the observed ordinal outcome arises from discretizing the underlying range into j-ordered groups. The DV (FM) was measured by five-point Likert scale at the ordinal level and independent variables (MB) are in the ordinal scale, categorical (other sources of income: yes or no) and continuous (experiences). The model fitting information is statistically significant which supports the multiple ordinal regression models (Appendices 8 and 12). The data and the model predictions are similar and the study has a good model. Therefore, the following link function is good fits for the posted research questions and the structure of the data.

Table 2. Parameter estimates (a)

		Estimate ^a	Wald	df ^b	Sig.	95% Confidence interval	
						Lower bound	Upper bound
Threshold	[FM mean = 2.25]	-0.287 (1.659)	0.030	1	0.863	-3.538	2.965
	[FM mean = 2.50]	0.848 (1.629)	0.271	1	0.602	-2.344	4.040
	[FM mean = 2.75]	1.252 (1.625)	0.594	1	0.441	-1.933	4.437
	[FM mean = 3.00]	2.041 (1.625)	1.579	1	0.209	-1.143	5.225
	[FM mean = 3.25]	2.961 (1.631)	3.315	1	0.069***	-0.227	6.166
	[FM mean = 3.50]	3.850 (1.640)	5.510	1	0.019**	0.635	7.065
	[FM mean = 3.75]	4.849 (1.652)	8.618	1	0.003*	1.612	8.086
	[FM mean = 4.00]	5.948 (1.668)	12.719	1	0.000*	2.679	9.216
	[FM mean = 4.25]	7.051 (1.702)	17.162	1	0.000*	3.715	10.387
	[FM mean = 4.50]	8.865 (1.932)	21.056	1	0.000*	5.078	12.651
	Location	MB mean	0.609 (0.182)	11.191	1	0.001*	0.252
Capital		3.288E (2.966E)	0.012	1	0.912	-5.485E	6.142E
Worker		-0.002 (0.032)	0.006	1	0.940	-0.065	0.060
Loan		4.244E (1.321E)	0.119	1	0.730	-1.988E	2.837E
Duration		0.422 (1.384)	0.093	1	0.760	-2.292	3.137
Ratei		-0.031 (0.022)	2.061	1	0.151	-0.074	0.011
Contrthh		0.003 (0.006)	0.231	1	0.631	-0.008	0.014
Othersi		0.635 (0.346)	3.368	1	0.066***	-0.043	1.313
Engib		-0.002 (0.014)	0.020	1	0.889	-0.029	0.025
Plnte	0.066 (0.203)	0.107	1	0.743	-0.331	0.464	

Note: Link function: Logit, N = 201.

Source: Own Survey, 2014.

^aPseudo R² = 0.115. Std. error in parenthesis.

^bEach Wald statistic is compared with a χ^2 distribution with 1 “df” to test whether the individual regression coefficient is zero given the other variables are in the model.

*1% significant level.

**5% significant level.

***10% significant level.

$$\text{Link}(\gamma_{ij}) = \theta_j - [\beta_1 x_{i1} + \beta_2 x_{i2} + \dots + \beta_p x_{ij}] \tag{1}$$

where “link ()” . the link function, γ_{ij} is the cumulative probability of the j th category (attributes) for the i th case, θ_j is the threshold for the j th category, p is the number of regression coefficients, $x_{i1} \dots x_{ip}$ are the values of the predictors for the i th case, $\beta_1 \dots \beta_p$ are regression coefficients. In our case, link (γ_{ij}) is the cumulative probability of respondents’ given weight for FM scale. θ_j is the threshold of FM which estimates cut-off values, $x_{i1} \dots x_{ip}$ are the values of the MB for the each IV. Therefore, the identified model for parameter estimates (a) is

Table 3. Parameter estimates (b)

		Estimate ^a	Wald	df ^b	Sig.	95% Confidence interval	
						Lower bound	Upper bound
Threshold	[FM mean = 2.25]	-0.557 (1.262)	0.195	1	0.659	-3.031	1.916
	[FM mean = 2.50]	0.606 (1.227)	0.244	1	0.621	-1.799	3.012
	[FM mean = 2.75]	1.032 (1.225)	0.710	1	0.400	-1.369	3.432
	[FM mean = 3.00]	1.856 (1.228)	2.285	1	0.131	-0.550	4.262
	[FM mean = 3.25]	2.796 (1.237)	5.109	1	0.024**	0.372	5.220
	[FM mean = 3.50]	3.687 (1.247)	8.742	1	0.003*	1.243	6.131
	[FM mean = 3.75]	4.738 (1.259)	14.155	1	0.000*	2.270	7.206
	[FM mean = 4.00]	5.843 (1.278)	20.894	1	0.000*	3.337	8.348
	[FM mean = 4.25]	6.937 (1.322)	27.528	1	0.000*	4.345	9.528
	[FM mean = 4.50]	8.742 (1.608)	29.554	1	0.000*	5.590	11.894
	Location	MB moneyreserve	0.167 (0.138)	1.467	1	0.226	-0.104
MB fixedinlabel		0.220 (0.132)	2.763	1	0.096***	-0.039	0.479
MB fungibility		0.045 (0.115)	0.154	1	0.695	-0.181	0.271
MB spendingless		0.072 (0.102)	0.491	1	0.483	-0.129	0.272
Overview		0.430 (0.139)	9.569	1	0.002*	0.158	0.702
ST orientation		-0.142 (0.142)	1.002	1	0.317	-0.421	0.136
LT orientation		0.367 (0.213)	2.964	1	0.085***	-0.051	0.786
Finprdctknowledge		-0.461 (0.168)	7.497	1	0.006*	-0.791	-0.131

Note: Link function: Logit, N = 201.

Source: Own Survey, 2014.

^aPseudo R² = 0.115. Std. error in parenthesis.

^bEach Wald statistic is compared with a χ^2 distribution with 1 “df” to test whether the individual regression coefficient is zero given the other variables are in the model.

*1% significant level.

**5% significant level.

***10% significant level.

$$\gamma_{ij} = \theta_j - [\beta_1 x_{1j} + \beta_2 x_{2j} + \beta_3 x_{3j} + \beta_4 x_{4j} + \beta_5 x_{5j} + \beta_6 x_{6j} + \beta_7 x_{7j} + \beta_8 x_{8j} + \epsilon] \quad (2)$$

where DV “ γ ” is FM mean score and the x_1 is MB mean score, x_2 is capital, x_3 is the number of worker, x_4 is the loan amount, x_5 is the loan duration, x_6 is the rate of interest, x_7 is the contribution to house hold expenditures, x_8 is the interest rate of other sources of financing, x_9 is the number of year engaged in business, x_{10} is the plan to expand business with microfinance loan, ϵ is the error term. The identified model for parameter estimates (b) is

$$\gamma_{ij} = \theta_j - [\beta_1 X_{1j} + \beta_2 X_{2j} + \beta_3 X_{3j} + \beta_4 X_{4j} + \beta_5 X_{5j} + \beta_6 X_{6j} + \beta_7 X_{7j} + \beta_8 X_{8j} + \epsilon] \quad (3)$$

where DV “ γ ” is FM mean score and the x_1 is reserving money for different expenses, x_2 is never spending more than a fixed amount, x_3 is spending on one thing and economizing on others, x_4 is spending less in the next month after spending this month, x_5 is overview of checking bank account and household expenditures, x_6 is short-term future orientation, x_7 is long-term future orientation, x_8 is financial product knowledge and ϵ is the error term.

Before running the model, the ordinal multiple regressions, explanatory variables were checked for multicollinearity (Verbeek, 2008). Two popular methods used to detect the occurrence of multicollinearity are Variance Inflation Factor (VIF) and Tolerance (TOL) indicating 10 or greater VIF and 0.10 or less TOL the presence of multicollinearity. So our result is free from multicollinearity problem (the Appendix 6). Moreover, the case-processing summary labels and values of the variables are identified that are included in the analysis (Appendices 7 and 11). The study focuses on modelling the average FM scale in relation to MB scale (Appendix 8). This model fitting leads to improve the ability to predict the outcome. The $\chi^2(8) = 32.328, p < 0.005$, indicates that the final model gives a significant improvement over the baseline intercept-only model. Thus, the model shows better predictions than the model estimated based on the marginal probabilities for the outcome categories. The goodness-of-fit table (Appendices 9 and 13) also contains a significant Pearson’s chi-square statistic ($\chi^2(1,992) = 2,216.87, p < 0.005$) for the model. These Pearson’s and Deviance statistics are intended to test whether the observed data are consistent with the fitted model. The pseudo- R^2 score (Nagelkerke = 0.15 and 0.115) (Appendices 10 and 14) indicates that MB and other covariates explain a comparatively low proportion of the variation among SME owners in their FM.

The IV (MB) has four labels: MB_1 = Reserving money for different expenses, MB_2 = Never spending more than a fixed amount, MB_3 = Spending on one thing and economizing on others, MB_4 = Spending less in the next month after spending this month. MB is also defined by some related variables like capital, loan amount, loan duration, etc. The major covariates of MB are an overview of checking balance, short- and long-term future orientation, saving behaviour and financial products knowledge. On the other hand, the DV, financial management has four labels: d_1 = manage daily financial affairs in an organized way, d_{2a} = impulsive and tempted to buy even don’t have the money for it, d_3 = never pay bills in late and d_4 = don’t pay on credit until having saved money. Parameter estimates are shown in Tables 2 and 3.

Threshold, in the parameter estimate tables, represents the DV in the ordinal logistic regression. For example, in the second row, the threshold estimates for “FM mean = 2.25” is the cut-off value between low and middle of the total FM score. Again, the threshold estimate for “FM mean = 4.50” is the cut-off value between middle and high of the mean FM score. The location, in the second half of the tables, represents the ordered log-odds or logit regression coefficients. The odds of MB practice (SME owners) considering FM to be high was 0.609 (95% CI, 0.252–0.965) times that of no MB practice, a statistically significant effect, Wald $\chi^2(1) = 11.19, p = 0.001$. This indicates that MB practice has a significant positive influence on the FM of SMEs.

Secondly, the parameter estimates tables report that an increase in income from other sources over existing business (expressed as category: yes or no) was associated with an increase in the odds of considering FM, with an odds ratio of 0.635 (95% CI, –0.043–1.313), Wald $\chi^2(1) = 3.368, p < 0.10$. This implies that there is a significant positive relationship between FM and the other sources of income of SME owners. The results also reported that capital, loan amount, the number of workers, loan duration, interest rate, contribution to household expenses, experiences of doing business and the future plans for expanding business have no significant impacts on the FM of SMEs.

The parameter estimates table (b) shows that the money management attitude and the spending pattern (e.g. never spending more than a fixed amount) have a significant positive impact on the FM of the SME owners. The odds of the practice of never spending more than a fixed amount (SME

owners) considering FM to be high was 0.220 (95% CI, -0.039 to 0.479) times that of “do not have the same practices”, a statistically significant effect, Wald $\chi^2(1) = 2.763$, $p = 0.096$. Other MB scales such as reserving money for different expenses (MB_1), spending on one thing and economizing on others (MB_3) and spending less in the next month after spending this month (MB_4) have no significant effects on the FM. If we consider the overview scale, short- and long-term future orientation scale and financial products knowledge scale as covariates of MB, the results showed that except the short-term future orientation scale, other covariates have significant effects on the FM. Results indicate that long-term future orientation has the positive significant influences on the FM. This extended orientation deals with the long-term result, future savings, and thinking. The odds of the practice of “future thinking” considering FM to be high was 0.367 (95% CI, -0.051 to 0.786) times that of don’t have the same practice and who pay attention more to present or short-term application, a statistically significant effect, Wald $\chi^2(1) = 2.964$, $p = 0.085$.

The odds of the practice of often checking account and balance (express in times and currency) considering FM to be high was 0.430 (95% CI, 0.152 to 0.702) times that of don’t have the same practice and who pay attention more to household expenses, a statistically high significant effect, Wald $\chi^2(1) = 9.569$, $p = 0.002$. This asserts that regular account and balance checking can increase the ability to manage the financial affairs of SME owners. Lastly, financial products knowledge has the highly significant negative relationship with the FM of SME owners. This scale includes the knowledge regarding financial products and investment decisions. The odds of having financial products knowledge considering FM to be low was -0.461 (95% CI, -0.791 to -0.131) times that of don’t have the same knowledge, a statistically significant effect, Wald $\chi^2(1) = 7.497$, $p = 0.006$. Once more, short-term future orientation has no significant impacts on the FM.

5. Conclusion and discussion

The study examines the effects of MB on the FM of SME owners. Here are the research questions answered by the researcher: What are the characteristics of enterprises in the study areas? Almost all firms contribute to the household expenditures and they are not much more experienced (below 10 years) in doing business. The average number of the worker in enterprises is four where most of the enterprises are promising (in terms of sales) in their own field. What are the major sources of income and expenditure of SMEs owners? The major sources of business’s capital are their own savings and loan from their relatives (informal sources). Micro-credit came after that. The average loan amount and duration of SMEs are BDT 200,000 and one year, respectively. Only 15% of samples reported that the interest rate is 27% (true interest rate of micro-credit), other SME owners could not readily tell the interest rate. The SMEs that borrowed from more than one FIs (including BRAC) are not doing well. Seven-eight percent of the SME owners have the future plans to expand their business through microfinance. More than 50% of the sample spends 100% of their SME income to meet the family expenditures. MB is related to households’ expenditures and can improve by keeping track of household finances and financial management (Antonides et al., 2011). The study reports that the contribution of SME owners to household expenditures has no significant influences on the FM.

What factors of MB influence the FM of SMEs? Our regression analysis’ results show that, in general, mental budgeting (MB_1 , MB_2 , MB_3 , and MB_4) has the positive significant impacts on financial management (d_1 , d_{2a} , d_3 , d_{4a}) of SMEs. Other sources of income over existing business are vital factor of MB that has the positive influences on FM. Another key element of MB is “money management attitude and the spending pattern (never spending more than a fixed amount)” has also significant positive influence on the FM of the SME owners. Furthermore, the overview of checking account and balance, and the long-term future orientation have a positive significant effect and financial products’ knowledge has negative significant effects on the FM of SMEs. Hilgert, Hogarth, and Beverly (2003) find a positive relationship between financial knowledge and FM. Again, Lusardi and Mitchell (2007) find a positive association between financial knowledge and the users’ behaviour of financial products. As per the BRAC microfinance rule, educational qualification is not the criterion to evaluate the credit-worthiness of SME owners but they must be able to maintain a bank account by their own name and signature. But in the present study, the highest educational qualification of the borrower

is Higher Secondary School Certificate.⁵ By this qualification, generally, they do not have sound knowledge about the financial products.⁶ From the discussion and analysis of the study, we have identified the significant issues: sources of finance, interest rate, other ways of earning over their existing business, never spending more than a fixed amount, checking the account and balance frequently, looking forward to long-term plans and profits, and giving emphasis on financial products and investment into the financial market having adequate financial literacy that can help in the financial management of SME owners.

The respondents from the BRAC were conservative to disclose the information of SMEs like capital, sales volume, etc. Therefore, not missing rate but getting real insights may decrease the reliability of the data. The low pseudo- R^2 score and the low Cronbach alpha for one scale indicate that MB and other covariates explain a comparatively low proportion of the variation and internal consistency. However, an accepted KMO (0.50) score and the significant result of Bartlett's Test of Sphericity ($F = 52.349, p = 0.00$) prove the suitability of using PCA (Appendix 15). The survey made only in the Chittagong, Bangladesh may reduce external validity, but descriptive analysis and statistically significant results can ensure the reliability. However, the study can create an avenue to form the FM policy of SME owners effectively and will contribute in reducing MB constraints. The study also helps to fill in the knowledge gap in evidence showing how MB determinants persuade FM of SME owners.

The sample for the study is small, and the proposed method of the study would be more effective with a large strategic sample. The present study is limited to SME owners who borrowed from BRAC only but further research in the same field may include other entrepreneurs. The representative agent model of BF states that the investment behaviour of a particular type of bias is investigated under different states of the world (Forbes, 2009). Therefore, MB practices by entrepreneurs across countries may help to get the real insights of BF. By definition, financial market includes short-term future orientation (money market) and long-term future orientation (capital market) and the MB scale also focuses both long- and short-term future orientation. Thus, another opportunity to carry out a research can be exploring the role of MB in the FM of financial markets' investors. Furthermore, research in consumer behaviour reports that consumers use mental budgets to control their purchasing behaviour (Heath & Soll, 1996). Thus, a new research may include the MB to analyse the consumers' buying behaviour.

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Notes

1. The scale is a measurement instrument of a variable that includes a certain subset of an independent dimension of that variable. In theory testing, to verify scale construction operationalizations, Factor Analysis is used.
2. IFRS-9 is an international financial reporting standard accredited by the ISAB. It introduces a substantially-reformed model for hedge accounting with enhanced disclosures about risk management activity.
3. PROGOTI is a project of BRAC for Microenterprise Loans. These loans, which range from USD 700 to 7,000, are given to both male and female entrepreneurs to support and expand existing small enterprises.
4. Numbers of the respondents are in parentheses.
5. It indicates the experiences of 12 years schooling (one to 12 classes).
6. In the High School, generally, students do not study the courses regarding financial products unless they have a diploma or an extensive training programme or university education in Economics or Finance.

Cover image

Source: <https://onmogul.com/stories/mental-budgeting-and-emotional-accounting>.

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Appendix 1

Characteristics of SMEs

		Capital	Worker	Loan amount	Interest rate	Other source	Contribution to HH in (%)	Business age	Other loan size	Loan duration
N	Valid	201	201	201	201	201	201	201	41	201
	Missing	0	0	0	0	0	0	0	160	0
Mean		1,749,875.6	4.03	214,328.36	19.39	1.48	76.01	11.14	525,365.85	1.01
Std. dev.		7,198,753.0	6.720	121,522.30	5.914	0.501	30.313	9.224	663,231.09	0.105
Skewness		12.876	8.203	2.633	0.859	0.090	-0.939	1.965	1.730	8.824
Std. error		0.172	0.172	0.172	0.172	0.172	0.172	0.172	0.369	0.172
Kurtosis		175.770	85.10	11.405	-0.922	-2.012	-0.303	4.774	2.375	78.949
Std. error		0.341	0.341	0.341	0.341	0.341	0.341	0.341	0.724	0.341
Range		100,000,000	80	940,000	19	1	100	54	2,700,000	1

Appendix 2

Cross tabulation of loan from other FIs and changes in sales volume

		Changes in sales volume			Total	
			Same	Increasing		Decreasing
Loan from other FIs	Yes	0	8	23	12	43
	No	1	36	86	35	158
Total		1	44	109	47	201

Appendix 3

Loan from other financial institutions

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Yes	43	21.4	21.4	21.4
	No	158	78.6	78.6	100.0
	Total	201	100.0	100.0	

Appendix 4

Changes in sales volume of the firms

		Frequency	Percent	Valid percent	Cumulative percent
Valid		1	0.5	0.5	0.5
	Same	44	21.9	21.9	22.4
	Increasing	109	54.2	54.2	76.6
	Decreasing	47	23.4	23.4	100.0
	Total	201	100.0	100.0	

Appendix 5
Plan to expanding existing business with micro credit

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Yes	156	77.6	78.0	78.0
	No	41	20.4	20.5	98.5
	4	1	0.5	0.5	99.0
	5	1	0.5	0.5	99.5
	6	1	0.5	0.5	100.0
	Total	200	99.5	100.0	
Missing	System	1	0.5		
Total		201	100.0		

Appendix 6
Multicollinearity test
Coefficients^a

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
		B	Std. error	β			Tolerance	VIF
1	Constant	2.537	0.355		7.150	0.000		
	MBmoneyreserve mean	0.047	0.040	0.093	1.180	0.240	0.729	1.372
	MBfixedinlabel mean	0.058	0.038	0.115	1.514	0.132	0.782	1.279
	MBfungibility mean	0.024	0.033	0.050	0.712	0.477	0.904	1.106
	MBspendingless mean	0.018	0.030	0.045	0.595	0.553	0.790	1.266
	Overview scale	0.111	0.040	0.193	2.791	0.006	0.944	1.060
	STorientation scale	-0.044	0.041	-0.078	-1.063	0.289	0.831	1.203
	LTorientation scale	0.100	0.062	0.120	1.616	0.108	0.821	1.218
	Finprdctknowledge scale	-0.098	0.048	-0.145	-2.022	0.045	0.879	1.138

^aDependent variable: FMtotal mean.

Appendix 7
For parameter estimates table (a)
Case processing summary

		N	Marginal percentage
FMtotal mean	2.25	6	3.0
	2.50	11	5.5
	2.75	7	3.5
	3.00	21	10.4
	3.25	36	17.9
	3.50	39	19.4
	3.75	39	19.4
	4.00	25	12.4
	4.25	11	5.5
	4.50	5	2.5
	6.00	1	0.5
Valid		201	100.0%
Missing		0	
Total		201	

Appendix 8

For parameter estimates table (a)
Model fitting information

Model	-2 Log likelihood	χ^2	df	Sig.
Intercept only	843.240			
Final	810.913	32.328	8	.000

Note: Link function: Logit.

Appendix 9

For parameter estimates table (a)
Goodness-of-fit

	χ^2	df	Sig.
Pearson	2,216.876	1,992	0.000
Deviance	810.913	1,992	1.000

Note: Link function: Logit.

Appendix 10

For parameter estimates table (a)
Pseudo R²

Cox and Snell	0.149
Nagelkerke	0.151
McFadden	0.038

Note: Link function: Logit.

Appendix 11

For parameter estimates table (b)
Case processing summary

		N	Marginal percentage
FMtotal mean	2.25	6	3.0
	2.50	11	5.5
	2.75	7	3.5
	3.00	21	10.5
	3.25	36	18.0
	3.50	39	19.5
	3.75	38	19.0
	4.00	25	12.5
	4.25	11	5.5
	4.50	5	2.5
	6.00	1	0.5
Valid		200	100.0
Missing		1	
Total		201	

Appendix 12

For parameter estimates table (b) Model fitting information

Model	-2 Log likelihood	χ^2	df	Sig.
Intercept Only	839.940			
Final	815.962	23.978	10	0.008

Note: Link function: Logit.

Appendix 13

For parameter estimates table (b) Goodness-of-fit

	χ^2	df	Sig.
Pearson	2,203.710	1,980	0.000
Deviance	815.962	1,980	1.000

Note: Link function: Logit.

Appendix 14

For parameter estimates table (b) Pseudo R²

Cox and Snell	0.113
Nagelkerke	0.115
McFadden	0.029

Note: Link function: Logit.

Appendix 15

Suitability of the 3rd factor analysis of Table 1 KMO and Bartlett's test

Kaiser–Meyer–Olkin measure of sampling adequacy		0.500
Bartlett's test of sphericity	Approx. χ^2	52.349
	df	1
	Sig.	0.000



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