

PROPENSITY TO PLAN OF YOUNG STUDENTS OF MANAGEMENT – A CASE STUDY WITH STUDENTS OF TECHNICAL EDUCATION OF THE FEDERAL INSTITUTE OF MATO GROSSO – CAMPUS BARRA DO GARÇAS

PROPENSÃO A PLANEJAR DE JOVENS ESTUDANTES DE GESTÃO – UM ESTUDO DE CASO COM ESTUDANTES DE CURSOS TÉCNICOS DO INSTITUTO FEDERAL DE MATO GROSSO – CAMPUS BARRA DO GARÇAS

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Abstract

Management technical education improves financial knowledge of students, but its effect on financial behavior is still unclear, especially in adolescents. The paper assessed whether management technical education is associated to propensity to plan of young students. Propensity to plan was estimated by using Generalized Linear Model (binomial distribution and 'logit' as link function) in dataset of 201 students of Federal Institute of Mato Grosso, Mato Grosso state/Brazil. Propensity to plan was 20.7% lower in students of management technical education, showing that financial literacy for adolescents is still needed even in educational programs focused on business administration.

Keywords: Financial Education. Financial Literacy. Financial Behavior. High School. Professional Formation.

Resumo

O ensino em gestão aprimora o conhecimento financeiro dos estudantes, porém seu efeito sobre o comportamento financeiro ainda é incerto, especialmente em adolescentes. O artigo avaliou se o ensino técnico em gestão está associado à propensão a planejar de jovens estudantes. A propensão a planejar foi estimada pelo modelo linear generalizado (distribuição binomial e função logit) em dados de 201 estudantes do Instituto Federal de Mato Grosso, Mato Grosso/Brasil. A propensão a planejar foi 20.7% menor entre os jovens estudantes dos cursos técnicos em gestão, assim, a alfabetização financeira ainda é necessária mesmo em cursos voltados ao gerenciamento empresarial.

Palavras-chave: Educação Financeira. Alfabetização Financeira. Comportamento Financeiro. Ensino Médio. Formação Profissional.

Introduction

Financial education has been considered as essential for human society due to the current increased level of economic uncertainty and vulnerability worldwide (Organisation for Economic Co-operation and Development [OCDE], 2020). More sophisticated technologies in financial services and products have modified the economic relationship between peoples at market, for instance, via digital currencies and payments (Kosinski, 2021). Moreover, economic changes, such as, the reduction in welfare politics and instability at labor market, are pressuring people to pursue the financial independency, especially from the government (Taylor & Davies, 2021) and from traditional working relationships (Costa, Carvalho Neto & Diniz, 2023). Thus, financial planning has emerged as one of the main strategies for people to enhance personal financial well-being and resilience to economic disruption (Lee, Lee & Kim, 2020).

Propensity to plan is here considered as “a tendency to make efforts to pursue the goal by using reminders and prompts to reduce possible distraction” (Lee & Kim, 2016, p. 36). Overall, financial knowledge and financial literacy stimulate the adoption of positive financial behavior and attitude toward money (Susilowati, Kardiyem & Latifah, 2020). Formal financial education at school influences the way that people acquire financial knowledge and form behavioral intentions (Shim, Xiao, Barber & Lyons, 2009). In this perspective, adults who took some finance related class in high school were positively associated to saving behavior (Akben-Selcuk, 2015). However, it is unclear how the acquired financial knowledge via formal education may influence planning behavior of adolescents, for example, students of high school.

By considering the digitalization and globalization of market, the youngest populations are increasingly being exposed to technologically sophisticated financial services and products (OCDE, 2020). For example, in Brazil during 2020, 86% of youngsters (i.e., less than 19 years old) had some relationship with some financial institution and 17% of people with 15 years old already had a credit card (Brazilian Central Bank [BCB], 2021). In addition, according to the Programme for International Student Assessment in 2018 (PISA), Brazilian students at school were rated amongst the countries with the lowest level of financial literacy and knowledge (OCDE, 2020). Adolescents are a heterogeneous group in terms of financial behavior. Even though the youngsters have an ideal of lifestyle based on financial freedom and independency (Riitsalu, Sulg, Lindal, Remmik & Vain, 2023), they often present a conspicuous consumption shaped by materialism and branding (Kolanska-Stronka & Gorbaniuk, 2022). They also are concerned about important issues in early adult life, such as, getting the first job and/or engaging in a university (Santos, 2014). Thus, the way that this group acquires financial literacy to orient planning behavior, for example, via formal education, is important to reduce their economic vulnerability at adulthood.

In Brazil, Federal Institutes of Education, Science and Technology are autarchies of the Ministry of Education that provide education at several levels and modalities (Law n° 11892, 2008). One of the types of courses provided by federal institutes is the learning at high school level integrated with some professional formation, for instance, in management and business (Law n° 11892, 2008). Although financial education is an important component of the Brazilian national guidelines for basic education (Ministry of Education, 2018), some evidences have showed that federal institutes have not yet implemented actions of financial literacy. Sousa, Lobão & Freitas (2023) found that financial education has not yet being included in professional courses even when educators recognize that they know the learning guidelines for financial literacy at school and the importance of this issue for the student. Another evidence showed that the level of financial education of business students was similar to the ones of other fields, indicating that the financial teaching practices may be focused on the organization management instead of personal context (Silva, Benevides, Duarte, Oliveira & Cordeiro, 2018). However, it is still unclear if management technical education stimulates the formation of positive

financial behavior of young student, for example, the financial planning.

Taking into consideration the context of financial education in federal institutes, the purpose of this study is to assess whether management technical education is associated to financial behavior of student using the propensity to plan as a case study. This research was carried out at the Federal Institute of Mato Grosso - Campus Barra do Garças, Mato Grosso state/Brazil, with 201 students at high school level that were split in two groups: i) students enrolled in management professional courses; and ii) the those enrolled in other fields. By comparing both groups, this study will be useful to understand the role that management technical education plays on the financial education and behavior of young students.

Propensity to Plan

Financial education is the development of skills and confidence for the making decision process of people via provision of information, instruction and advice, in order to improve their understanding on the financial products/services, concepts and risks (OCDE, 2005). Financial education is important for financial literacy that consists in the application of personal finance knowledge by people in their economic decisions, resulting in the maximization of their financial well-being (Huston, 2010). Hence, the understanding of the factors that influence the application of acquired knowledge in positive financial behavior, for instance, financial planning, is important to define financial literacy strategies.

The theory of propensity to plan aims to understand how the individual efforts to manage savings influence its level of asset accumulation (Ameriks, Caplin & Leahy, 2003). Overall, planning is an individual and intertemporal choice between smaller-sooner and larger-later rewards (Lynch Jr, Netemeyer, Spiller & Zammit, 2010). In a systematic review about financial literacy, Goyal & Kumar (2020) showed that financial literacy improves the financial planning by making people wiser about financial concepts and its associated risk (i.e., debt literacy, interest rate, investment, mortgage, among others). The decision to make plans (i.e., propensity to plan) was then associated to wealth accumulation, which in turn, it leads to a higher stability and resilience in the financial well-being, especially during retirement period (Lee et al., 2020). Hence, financial planning increases the monitoring of expenditures, resulting in higher levels of savings and personal wealth (Ameriks et al., 2003).

Peoples tend to be more motivated when it has a defined goal, but their performance is dependent on the intrinsic motivation (Gómez-Miñambres, 2012). Thus, planning performance of individuals affect the consumer well-being in different ways (Lynch Jr et al., 2010), for instance, stimulating wealth accumulation or being satisfied in a vacation experience. Therefore, the characteristics of individuals and of their context are important drivers of their own financial decision in making plans.

At long-run, financially literate peoples tend to present a higher wealth accumulation due to investment in retirement plans (Behrman, Mitchell, Soo & Bravo, 2012). Hence, the association between financial knowledge and financial well-being is mediated by the propensity to plan, so financial knowledge alone is not enough to improve financial quality of life (Lee et al., 2020). Financial education programs can provide advice to guide planning, but understanding financial concepts is not sufficient to eliminate the gap between financial knowledge and behavior, because other socioeconomic and demographic factors also play an important role in planning.

The life cycle model showed a substantial heterogeneity in both financial literacy and financial behavior considering educational status, age, gender and income (Lusardi & Mitchell, 2014). More educated people present a higher financial literacy and cognitive capacity to understand the applicability and the risk associated to each financial concept (Okamoto & Komamura, 2021). Indeed, students that took finance related class at college or high school level was associated to more likelihood of positive financial behaviors, such as, paying bills on time, having a budget in place, and saving for the future

(Akben-Selcuk, 2015). In this perspective, people are more leaned to save for the future if they had taken finance related courses in high school or college (Akben-Selcuk, 2015). In addition, business students at undergraduate level are more knowledgeable in financial concepts than non-business students (Furtuna, 2008). This suggest that acquired financial knowledge from formal education may be an important component of the financial behavior.

Younger and older peoples tend to be less financially literate than those middle-aged, indicating that preferences and abilities may change with the people age (Okamoto & Komamura, 2021). While adults face difficult financial challenges in their life that demand the acquisition of financial knowledge, for example, making household budget or investments, youngers are likely more interested in building a professional career or enjoying socialization and leisure (Santos, 2014). On the other hand, self-confidence in finance management is higher in older people due to their belief about accumulated experiences that may discourage then to engage in financial education (Pak & Chatterjee, 2016). Hence, both younger and older peoples are great focal group to financial education strategies.

Differences in financial behavior were also associated to gender gaps (Goyal & Kumar, 2020). Overall, man tend to have higher financial knowledge than women, but women is more leaned to present positive financial behavior and attitude (Okamoto & Komamura, 2021). For example, propensity to save and aversion to risk tend to be lower among women (Lee & Pocock, 2007). This could be explained by the fact that financial behavior and knowledge not always have a clear association (Fabrigar, Petty, Smith & Crites Jr, 2006).

Another important driver of financial behavior is the received income, in which richer people have a tendency to have an overconfidence in their financial decision (Silva & Lucena, 2022). According to Xian and O'Neill (2018), individuals that have higher income and different economic resources (i.e., checking and saving accounts, retirement accounts, credit card) are more leaned towards making financial plans and to set long-term goals. Moreover, highest income is often associated to asset accumulation and financial security (Xiao & O'Neill, 2018). Thus, socio-demographic aspects are important drivers of financial behavior, especially for propensity to plan.

Both actual and self-assessed financial literacy play an important role in financial behavior. The self-assessment of financial literacy is carried out by asking to people to rate their own financial knowledge, while actual knowledge is measured by the number of correct answers to the financial questions (Okamoto & Komamura, 2021; Lusardi & Mitchell, 2014). Interestingly, people often overestimate their own financial literacy, especially in groups with high level of education (Silva, Silva, Vieira, Desiderati & Neves, 2017). However, a previous study showed that people with high confidence in financial skills was more leaned to make financial planning (i.e., propensity to plan), indicating that self-confidence reduce psychological barriers of acquiring information and developing plan (Rooij, Lusardi & Alessie, 2012).

Overall, reviewed studies presuppose that people make wisely decisions when are financially literate (actual or self-assessed), but this association is intermediated by socio-demographic aspects, such as age, gender (Okamoto & Komamura, 2021) and income (Sabri, Wahab, Mahdzan, Magli & Rahim, 2022). However, it is unclear the role that formal education, such as, management technical education, plays on the formation of financial behavior of young students, for instance, propensity to plan.

Method

Case Study

This study was carried out at Federal Institute of Education, Science and Technology of Mato Grosso, Campus Barra do Garças (IFMT-BAG), located at Mato Grosso state/Brazil. These institutions are autarchies of the Ministry of Education that aim to provide, develop and promote professional and

technological education in different levels and modalities, as well as, to foment projects of research and extension (Law nº 11892, 2008). One of the educational modalities is the technical education integrated to high school, in which students get the regular curricular knowledge at high school level and the professional formation, for instance, in business and management. Federal institutes also provide financial support to students, such as research grant and student benefits from the National Program of Student Assistance (Decree nº 7234, 2010). Hence, this educational institution is a great case study to test whether management technical education and socio-demographic aspects influence propensity to plan of young students.

Data

This study gathered information of the type of enrolled course, age, gender, income source, financial literacy (actual vs self-assessed) and financial planning of 201 students of technical education integrated to high school. Data collection was carried out by applying a questionnaire during November 2019.

To assess whether management technical education promotes propensity to plan of students, we considered the ‘type of enrolled course’ as binary variable where 1 was attributed to student of management technical education courses and 0 to the ones of other courses. Management technical education courses included business administration and trading, while the others encompassed environmental management, information technology and food.

‘Age’ was considered here as a discrete variable and ‘gender’ was a binary variable, being 1 for male and 0 for female participants.

‘Income source’ was a binary variable to account for the type of resource, being 1 for student that only receive money from their parents and 0 for the ones that receive other resources, such as, financial grants and student benefits, or none.

‘Actual financial literacy’ was assessed considering the number of right answers from 17 financial questions about basic and intermediate financial knowledge that is expected from adolescents.

‘Self-assessed financial literacy’ was measured asking to participating students how they consider their own financial knowledge taking into account a Likert-type scale, ranging from 1 (very low) up to 5 (very high).

‘Propensity to plan’ was estimated considering a binary variable where 1 was attributed to students that assumed to make plans for their personal finances, and 0 for those that do not. For further understanding about what is the motivation of students, it was asked which are the main goals associated to their financial planning: to control expenditures, to buy something, to travel with school, to travel with family, to help somebody, other goals or no specific goal. The applied questionnaire is provided in Supplementary Material.

Statistical analysis

To assess the effect of the type of enrolled course and others independent variables (i.e., age, gender, actual and self-assessed financial literacy and income resource) on propensity to plan, it was applied the Generalized Linear Model (GLM), assuming a binomial distribution and ‘logit’ as the link-function. In order to compare the effect of independent variables, all of them were standardized by using z-score transformation. Model selection was based on the lowest value of Akaike Information Criterion (AIC), being selected the one with $\Delta AIC < 2$.

All statistical procedures were carried out in R version 4.0.3 (R Core Team, 2023), using ‘MASS’ package version 7.3.58.3 for Generalized Linear Model (Venables & Ripley, 2002) and ‘dredge’ function from ‘MuMIn’ package version 1.43.17 for model selection with Akaike Information Criterion (Barton,

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2009). Graphics was created by using ‘visreg’ package version 2.7.0 for statistical models (Breheny & Byrchet, 2017) and ‘networkD3’ package version 0.4 for Diagram of Sankey (Allaire et al., 2017).

Results and Discussion

According to the results of the survey, 69.7% of the students informed that they make financial plannings (Table 1). Out of 201 students, 25.9% (n=52) of the participants were identified as students of management technical education, in which 65.4% affirmed that they planning their personal finances. Student of other fields represented 74.1% (n=149) of the sample, being 71.1% of planners. The majority of participants was female gender (57.2%, n=115), in which 67.8% informed that they do plan their finance. Finally, 39.8% of participants had 16 years old, and that age group was the majority in both groups of students, being gathered little information of students of 19 and 20 years old.

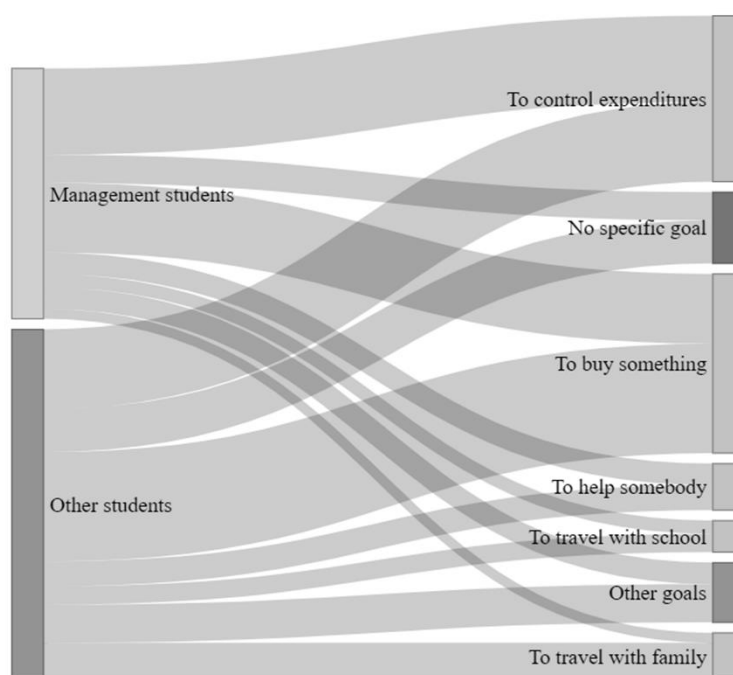
Table 1 – Descriptive statistics of participating students.

Overall students		Total	Do you make financial plans?			
			Yes		No	
			n	%	n	%
Total		201	140	69.7	61	30.3
Gender	Male	86	62	72.1	24	27.9
	Female	115	78	67.8	37	32.2
Age	15	45	34	75.6	11	24.4
	16	80	58	72.5	22	27.5
	17	55	36	65.5	19	34.5
	18	19	11	57.9	8	42.1
	19	1	1	100.0	0	0.0
	20	1	0	0.0	1	100.0
Management technical education students						
Total		52	34	65.4	18	34.6
Gender	Male	18	11	61.1	7	38.9
	Female	34	23	67.6	11	32.4
Age	15	10	9	90.0	1	10.0
	16	22	12	54.5	10	45.5
	17	13	9	69.2	4	30.8
	18	6	3	50.0	3	50.0
	19	1	1	100.0	0	0.0
	20	0	0	-	0	-
Other fields students						
Total		149	106	71.1	43	28.9
Gender	Male	68	51	75.0	17	25.0
	Female	81	55	67.9	26	32.1
Age	15	35	25	71.4	10	28.6
	16	58	46	79.3	12	20.7
	17	42	27	64.3	15	35.7
	18	13	8	61.5	5	38.5
	19	0	0	-	0	-
	20	1	0	0.0	1	100.0

Out of a total of 175 participating students that informed that make plan for their personal finances, 120 reported that their specific goal is to buy some product (Fig. 1). Students that plan for buying something was proportionally lower in the group of students of management technical education (42.3%) than those of other fields (65.8%). The proportion of management students that plan their

finances for the categories of other goals (13.5%), to travel with family (5.8%) and no specific goal (17.3%) was also lower compared to students of other fields, in which the proportions were 22.8%, 22.2% and 25.5%, respectively. Moreover, the planning goals of to control expenditure, to help somebody and to travel with school presented similar proportions between both groups of students, being, respectively, 51.9%, 13.5% and 7.7% for management students and 48.3%, 15.4% and 10.7% for non-management students.

Fig. 1 – Diagram of Sankey represents the planning goals of students of management and non-management technical education. The flow from both management and non-management technical education to different options of planning goals was the proportion of students in each category of goals by the total number of students in their respective type of enrolled course.



Propensity to plan

Model selection of propensity to plan resulted in two models with similar prediction power and consistent tendency in independent variables effects (i.e., $\Delta AIC < 2$), which were models A and B from the Table 2. In both models, the propensity to plan was lower between students from management technical education compared to students of other fields that were indicated by the negative coefficient associated to variable 'management course' (Model A: $\beta = -0.397$, $P < 0.05$; Model B: $\beta = -0.375$, $P < 0.05$ in Table 2) (Fig. 2-A). By estimating likelihoods, the results indicated that a student of management technical education with 16 years old (i.e., the major age group in the sample) and an intermediate level of financial literacy (i.e., actual financial literacy equal 8 and self-rated financial literacy as 3) presented 20.7% less probability of planning its personal finance than a non-management student. All probabilities prediction was carried out by using model A from Table 2.

The fact that the students of management technical education have presented lower propensity to plan than students of other type of courses (Fig. 2 and Table 2) may indicate that financial literacy was not yet effectively integrated in formal management education. Although the importance of financial literacy was already recognized by students (Silva & Escorisa, 2017) and by the Brazilian national guidelines for basic education (Ministry of Education, 2018), this result corroborates with previous studies that indicated that this subject is still not effectively included in federal institutes, even in management technical formation (Sousa et al., 2023, Silva et al., 2018). Hence, the findings here suggest

that management technical education for young students may not being effective in terms of financial education and formation of positive financial behavior.

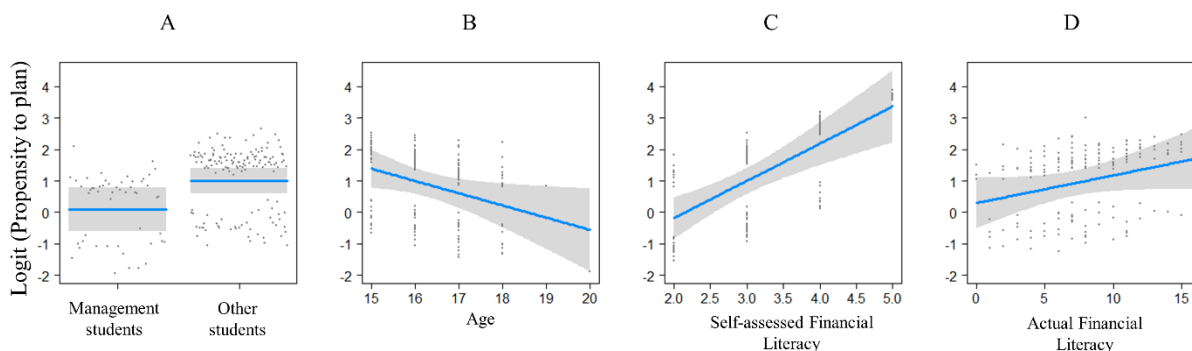
Table 2 – Ranked models of propensity to plan of management and non-management students. Considering that a binominal distribution and logit as link function were assumed for models, probabilities were than estimated by using $Y = 1 / \{1 / [e^{(X)}] + 1\}$, where ‘X’ represents all the independent variables and their respective coefficients. Independent variables were standardized via z-score transformation. Models were ranked taking into account the lowest value of Akaike Information Criterion (AIC), being selected the ones with $\Delta AIC < 2$. ‘*’ indicates the significance level of parameters: * 0.1; ** 0.05; *** 0.01. ‘---’ indicates a non-included variable. Model weight indicates the prediction power of each model, and ‘R²’ indicates the variability of the propensity to plan that is explained by the variation of all independent variables included in the selected model.

Model	A	B	C
Intercept	0.997***	0.980***	0.998***
Management Course	-0.397**	-0.375**	-0.388**
Self-assessed Financial Literacy	0.878***	0.934***	0.869***
Actual Financial Literacy	0.309*	---	0.307*
Age	-0.375**	-0.349**	-0.365**
Parents as an income source	---	---	0.062
Male gender	---	---	---
AIC	222.8	223.8	224.8
ΔAIC	0.00	1.02	2.00
Model weight	0.28	0.17	0.10
R ²	0.14	0.13	0.14

The results here are restricted to young student at high school that also receive professional formation in management and non-management fields. Considering that management education programs provide useful and usable knowledge to improve business administration (Roquette, Laureano & Botelho, 2014), previous studies at university level revealed that student of different management areas, such as, business, economic and accountability, were more financially literate and showed higher tendency to present positive financial behavior than non-management students (Chen & Volpe, 1998; Furtuna, 2008; Roquette et al., 2014). Thus, this paper highlights that the understanding of the financial behavior associated to formal management education is dependent on the educational level of students, i.e., high school vs college. Indeed, financial literacy, for instance, was lower between college students that had finance related class during high school level, compared to student who haven’t taken such a class (Furtuna, 2008). This indicates that a more effective strategy of financial education at school is still needed, because there is no guarantee that management technical education for adolescent will improve their financial well-being.

The positive association between education at college level and propensity to plan (Lee & Kim, 2016; Lee et al., 2020) may indicate that people are acquiring financial knowledge during adulthood. By including financial education at school, the youngsters will likely make better decision and planning for their life. Considering that more educated peoples are likely to be more risk averse and less overconfidence in their decisions (Silva & Lucena, 2022), planning may be an appropriate strategy for financial resilience. In this perspective, students of financial planning play an important role in spreading financial knowledge acquired from formal education between their family and friends (Watkins, Mccoy, White, Reiter & Liu, 2024). Thus, the benefit received from financial education at school would not be restricted to the individual, but also would be beneficial for the society.

Fig. 2 – Propensity to plan of students by their enrolled type of course, and, self-assessed and actual financial literacy. Graphics depict model A from Table 2.



Self-assessed vs actual financial literacy

The results revealed that self-assessed financial literacy was positively associated to propensity to plan, showing that students who self-rated as high level of financial literacy tend to behave as planners (Model A: $\beta = 0.878$, $P < 0.01$; Model B: $\beta = 0.934$, $P < 0.01$ in Table 2) (Fig. 2-C). In addition, actual financial literacy was also positively associated to the propensity to plan of students ($\beta = 0.309$, $P < 0.10$ in Table 2) (Fig. 2-D), but this effect was less accentuated than self-assessed financial literacy, indicated by its lower coefficient. Amongst the management students with 16 years old and intermediated actual financial literacy, students who self-rated their financial literacy as intermediate (i.e., 3) obtained 27.3% more propensity to plan than those with low self-rated financial literacy (i.e., 2). Actual financial literacy increased the propensity to plan in 8.8% among management students with 16 years old and intermediate level of self-rated financial literacy. The findings here indicated that self-assessed and actual financial literacy were both associated to propensity to plan. Previous studies showed that individuals tend to overestimate their own financial literacy (Okomoto & Komamura, 2021; Lusardi & Mitchell, 2014), but self-assessed financial literacy had a higher effect on propensity to plan than actual financial literacy, indicated by the difference between coefficients. The more accentuated effect of self-assessed financial literacy on the propensity to plan corroborates to previous studies, in which individuals with higher confidence in their personal finance knowledge are more likely to plan for retirement (Scheresberg, 2013). Indeed, self-confidence people have less psychological barriers to get new information in order to develop planning strategies (Rooij et al., 2012). Consequently, self-assessed financial literacy is an important driver of financial behavior and well-being (Sabri et al., 2022).

Age

Both selected models showed that propensity to plan was negatively associated to age, demonstrating that youngest students were more leaned to plan their personal finances than elder students (Model A: $\beta = -0.375$, $P < 0.05$; Model B: $\beta = -0.349$, $P < 0.05$ in Table 2) (Fig. 2-B). Youngest management students (i.e., 16 years old) with intermediated actual and self-assessed financial literacy were 18.8% more leaned to plan their personal finances than elder students (i.e., 18 years old). The higher propensity of youngest students to plan their personal finances may be associated to expectations and uncertainties inherent to their age. Adolescents that initiate the high school have a clearly journey during the educational process, while students that is ending this phase will face new challenges associated to the adult life. Elder adolescents (i.e., 18 years old) are likely concerned to join at college or get the first job in order to pursue their financial independence (Riitsalu et al., 2023). In this case, it is important to understand whether financial planning tend to be influenced by the expectation and uncertainties about the future. However, students with 19 and 20 years old were underrepresented in the sample, indicating that estimation for elder adolescents may be misleading. Such age group are rarely presented in high school, because in that age, people are often engaged at college. Thus, in order to understand the propensity to plan of such age group, studies in the future can focus on freshman or sophomore students at college

level.

Income

The effect of the origin of income indicated that propensity to plan was higher between students that only receive money from their parents, but this variable appeared only in the third model with a non-significant effect ($\beta=0.062$, $P>0.10$, model C in Table 2). Parents with higher level of income provide economic stability and resilience for their child (Mazurik, Williamson & Knudson, 2023). Thus, the finding here suggest that providers parents may have more participation in financial decisions on the personal finance of their children, motivating the planning practices. Thus, the role that parents play on the provision and management of student income is still unclear, especially, its associated effects on their financial behavior, such as propensity to plan. On the other hand, the management of other type of income, such as research grant and financial benefits provided by school, may be in charge of the students, and it is expected that propensity to plan was null among students that had no income source. This inconclusive result suggest that future studies can explore if the way how students manage their income is influenced by who provide such financial resource.

Gender gap

‘Gender’ was not presented in any statistical model (Table 2), suggesting that such variable had no effect on propensity to plan of focal students. Even if gender had no effect on propensity to plan in this work, in overall, previous studies reported that women tend the be less financially literate than men (Lusardi & Mitchell, 2014; Driva, Luhrmann & Winter, 2016; Okamoto & Komamura, 2021). Indeed, phycological belief and stereotypes were associated to gender gap in financial literacy among teenagers (Driva et al., 2016). Although this study presented an inconclusive difference between genders, previous studies showed that female teenagers are an important group for financial education programs at school.

Gonçalves, Ponchio & Basílio (2021) showed that the drivers of financial well-being of women can be associated to several factors associated at individual, residence, and community/social levels. Demographic and phycological aspects at individual level that influence the women’s financial well-being are age, income, education, attitudes, beliefs, abilities, motivation, among others. Caring for children and family, family structure, and intimate partner violence play an important role for women’s financial well-being at residence level (Gonçalves et al., 2021). Finally, work and career, institutional and cultural, and incidents of violence affect the women’s financial well-being at community level (Gonçalves et al., 2021).

The division of labor model indicates that, in those cases when man manages household finance and woman dedicates to other tasks, she tends to have lower level of financial literacy (Lusardi & Mitchell, 2014). However, woman tends to have a higher life expectation than man, therefore, she only receives incentives to acquire financial knowledge prior to widowhood (Hsu, 2016). Thus, financial literacy in this group tend to manifest belatedly in their life. This gender gap is more accentuated in developing countries due to social norms linked to the participation of women in economic decision (Goyal & Kumar, 2021). Moreover, stereotypes beliefs influence the underinvestment in financial knowledge by women (Driva et al., 2016). Among all these predictors, only demographic information was considered here in the model of propensity to plan, so there are still many factors to be understood by future studies.

Limitations and Implications for financial education programs

People that do not make plan for their finance can be unaware on the effect of the financial decisions in their own well-being (Riitsalu et al., 2023). By pursuing financial freedom, youngsters are likely to engage in high-risk enrichment strategies, such, as stock markets and cryptocurrencies (Taylor &

Davies, 2021). Although the self-assessed financial literacy of students was associated to a positive financial behavior, i.e., propensity to plan, this study does not assess other attitudes, such as, investment and consumption, that could be affected by their overconfidence in financial knowledge. Thus, actions to increase financial education of youngsters is still a challenging task for educators and policy makers.

Financial education programs may go beyond of closing knowledge gaps of student by considering demographic, psychological, and social aspects of student. Individual characteristics, such as, age, gender, ethnicity, mood, personality traits, knowledge, among others, influence behavior and attitude toward money (Susilowati et al., 2017). Psychological traits, such as personal beliefs, subjective norms, self-confidence, among others, are also important drivers of financial behavior and performance, for instance, saving money (Susilowati et al., 2017). Finally, financial behavior and well-being are also influenced by other non-cognitive factors, such as, self-esteem, optimism, and deliberative thinking (Hashmi et al., 2021).

Despite of this analyses not include all those subjective and non-cognitive drivers of the financial behavior, the analysis detected the gap in propensity to plan between management and non-management student. This research also faced several limitations including small sample size and non-probability convenience sampling method. Those limitations resulted in low coefficient of determination in both selected models ($R^2 = 0.14$), indicating that selected independent variables only explain 14% of the variation in propensity to plan of participating students. In order to avoid such limitation, future studies should take into account a more accurate sampling method and random or systematic sampling techniques.

Another important characteristic of the sampling design was the period of the data collection that was done in 2019, i.e., prior to the outbreak of COVID-19. After that, virtual classes were implemented worldwide in order to avoid personal contact between students and educators. Considering that emergency distance learning affected education quality (Toubasi, Al-Harasis, Obaid, Albustanji & Kalbouneh, 2022) and that the coronavirus pandemic affected financial behavior of people (Ma, Siu, Cheong & TungA, 2022), future studies should update the findings here by showing how management education via virtual classes shaped financial knowledge and behavior of students during and after the coronavirus pandemic, especially at high school level.

Conclusion

The objective of the present study was to assess whether management technical education is associated to financial behavior of student using the propensity to plan as a case study. This study revealed several interesting findings. Firstly, propensity to plan of participating students were associated to their type of enrolled course, being students from management technical education less leaned to plan their personal finances than the ones from other fields. This evidence showed that, although management technical education may provide concepts and instruments for personal financial planning, the educational process was not associated to behavioral changes towards to planning practices. Thus, additional efforts toward a more robust financial education process are still needed in high school, even in the technical professional formation.

Secondly, the propensity to plan was higher in self-assessed than actual financially literate students. This result is important to indicate how self-confidence determine the financial behavior of young students. Psychological aspects of educational process focused on self-empowerment and beliefs are as crucial as teaching financial concepts and skills.

Thirdly, future studies should investigate other drivers of propensity to plan. Age, income, gender and social/cultural aspects play an important role in formation of financial behavior of young students. The manner on how such factors may be considered in financial educational programs is then an important

topic for future researches.

Financial planning mediated by financial literacy is a useful strategy to improve financial well-being of individuals at both short and long terms. Financial decisions demand the understanding of basic and intermediated concepts associated to personal financial management, for instance, checking account, budget, savings, investment, expenditure, debt, credit card, among others. Overall, management education provides such knowledge, but positive financial behaviors is also dependent on other several factors associated to demographical and psychological traits of individuals and social/community context, which goes beyond of what is taught and learned at financial related class.

This study suggests that educators and policymakers should not be dependent on formal management education to provide financial literacy to youngest students. Additional actions focused on personal finances are needed to inform them about financial concepts and its associated risk, and how applying them in financial decision. Financial literacy may be used to prepare young students for the challenges in adulthood, such as, defining college field, finding the first job, and retirement plans. Thus, earliest acquiring financial knowledge is crucial for the financial well-being of students.

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Supplementary Material

Questionnaire

Course: _____

Gender: () Male () Female () Other

Age: _____

What is the origin of your income?

() Only from my parents

() Others

() I do not receive any income

Do you make financial plans?

() Yes

() No

If so, what is the main purpose of your financial planning?

() To control expenditures

() No specific goal

() To buy something

() To travel with my family

() To travel with the school

() To help somebody

() Another goal

How do you consider your own financial knowledge?

() Very low

() Low

() Intermediate

() High

() Very High

Financial Literacy Assessment

a. The main objective of financial education is making people richer.

() True

() False

() I don't know

b. Fixed expenses are those that is permanent in budget and have no variation in their value.

() True

() False

() I don't know

c. Food, energy and rent are example of variable expenses.

() True

() False

() I don't know

d. Salary and student benefits are example of variable income.

() True

() False

() I don't know

e. Planning the expenditures is a way to avoid debt.

() True

() False

() I don't know

f. Cash flow is an instrument to control finances.

() True

() False

() I don't know

- g. In a financial application, the sum is the applied value.
 True
 False
 I don't know
- h. In a financial application, the interest is the financial yield.
 True
 False
 I don't know
- i. In a financial application, capital is the obtained value, considering the sum between financial yield and investment.
 True
 False
 I don't know
- j. Simple interest is the calculation of the interest on interest.
 True
 False
 I don't know
- k. the following formula refers to compound interest.
 $M=C* [(1+i)] ^n$
 True
 False
 I don't know
- l. "Buying in cash" is associated to interest charges.
 True
 False
 I don't know
- m. Financial loan and mortgage are associated to interest charges.
 True
 False
 I don't know
- n. Stock market is a place of buying and selling of company shares.
 True
 False
 I don't know
- o. Investing in stock market pays interest to investor.
 True
 False
 I don't know
- p. Compound interest is widely used in financial loan, mortgage and credit card.
 True
 False
 I don't know
- q. Suppose that a person has \$ 100,00 to invest in compound interest during 5 months with an interest rate of 2% per month. The resulting sum would be closely to \$110,00.
 True
 False
 I don't know