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Application of TPB on the Saving Intention among the Students of Community Colleges: Moderating Effect of Mobile Applications

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Abstract
The main objective of this study is to examine the saving intention among the Community College students from the Planned Behavior Theory (TPB) perspective and to investigate whether the proposed relationships are contingent upon their perceptions towards mobile applications. In order to achieve the objectives, a survey study was conducted among 117 community college students in Kedah, Selangor, Perak in Malaysia. PLS test results revealed that attitude, subjective norms, and perceived behavior control 'have' significantly influence students' intention to saving. However, mobile applications do not has moderate direct relationships. In conclusion, this study is significant as the understanding of saving behavior is essential not only for future retirement and investment plans of younger generations but also for their financial resilience when exposed to adverse shocks such as COVID-19.

Keywords: Saving intention, mobile applications, students

Introduction

Saving plays a vital role in the financial and economic development of a country (Hammad et al., 2010; Hashim et al., 2017). For the households, savings are essential not only to ensure future retirement and investment, but it also facilitates a kind of protection when they are exposed to adverse shocks (Kapounek et al., 2016) such as the during recent pandemic strikes, Novel Coronavirus (COVID-19) (Vergara & Bonilla, 2020). Moreover, saving is important for the younger generation as it can help them to establish good habits. For instance, the earlier the money is saved, the greater chance for them to take advantage of compound interest (Furnham, 1999). Moreover, saving early will make them get prepared against unexpected shocks. For example, the recent Covid-19 crisis initially emerged as a public health issue, but later it turned into a global threat at a micro and macro level. It did not only has a severe impact on the global economy, but it has also caused significant economic losses to businesses, which in turn has caused workers losing their jobs and regular income (Fairlie, 2020; International Labour Organization, 2020). Hence, the Covid-19 pandemic has highlighted the importance of savings during stable times to prepare for emergencies. Besides for future preparation, savings also help to promote long-term economic developments (Chalimah et al., 2019).

Based on the official reports, Malaysians' savings would last between one to four months during the outbreak (Department of Statistics, 2020). In addition, the habit of savings among Malaysians is still low (Credit Counseling and Management Agency, 2018). At the national level, Gross National Savings (GNS) decreased to 24.9% in 2019 from 26.7% in 2018 and 29.2% in 2017 (Bank Negara Malaysia, 2020). The declining trend is a major concern as it

shows that Malaysians do not earn enough income as most of their disposable income are used to pay off debts. This can be seen through Bank Negara Malaysia statistics which reported that Malaysia's household debt was 93.3% in December 2020. Concerns about high household debt include borrowers' ability to pay as well as their ability to save for the future, thereby deteriorating the recovery economy (Zabai, 2017). Moreover, the World Bank indicates that Malaysians' spending exceeds their affordability more than they can afford (World Bank, 2019). This situation exposes them to the risk of bankruptcy. A total of 74,699 Malaysians went bankrupt from 2016 to December 2020 (Malaysian Insolvency Department, 2020). More alarming is that the number of people under the age of 35 years declared bankrupt has continued to rise over the years. In this context, it is critically important to understand the reasons for stimulating the saving behavior of the younger generation in Malaysia to ensure the robustness of the national economy for future economic shocks.

A popular research area in sociology is on identifying the key differences among generations in terms of their understandings, attitudes, perceptions, and expectations from the world that would guide their behavior and decisions. For instance, Rahayu and Nurfauziah (2020) posit that generation Y and Z have sufficient financial knowledge, but it is challenging for them to set aside their income as savings. Particularly this might be due to the fact that the younger generations are the highest age group of bankruptcy due to excessive spending on unnecessary items and due to prosperous lifestyle that drives them to use loans to satisfy their needs (Loke, 2016; Azlan et al., 2015). In addition, the high cost of living contributes to the reason why many Malaysians younger generations are unable to save money (Credit Counseling and Management Agency, 2018).

Accordingly, this study focuses on understanding whether the construct of TPB, namely attitude, subjective norms, and perceived behavior control, will explain the saving intention of the younger generation in Malaysia. Despite TPB being used in different contexts (Amer Azlan et al., 2016; Nasiri et al., 2021; Sabri & MacDonald, 2010), a similar study to understand the saving intention of generations Z was rarely examined in the Malaysian context. To fill this gap, this study emphasizes the construct of TPB to determine the saving intention among the young generations. According to TPB, three types of considerations influence human behaviour: behavioural beliefs about the consequences of behaviour, normative beliefs about the perception of expectations of others, and control beliefs on how easy or difficult it would be to perform the behaviour (Ajzen, 1991). Nowadays, advanced technology such as mobile applications are the best way to communicate and engage with users (Van Heerde et al. 2019). Studies done by Loaba (2021) and Deb et al. (2020) claimed, mobile applications significantly influence saving intentions. The benefit of using mobile applications includes easy transfer of money and online payments, proper record tracking for expenses, and time-saving for mobile application user (Shaikh & Karjaluoto, 2015). Therefore, this study also investigates the moderating effects on the perception of using mobile applications to increase saving intentions among students.

Theoretical Review and Hypotheses Development

Theory of planned behavior or TPB is a theory of psychology introduced by Ajzen (1991), which is the most popular theory for studying the behavior of individuals in various fields (Cucinelli et al., 2016; Du & Pan, 2021; Hew et al., 2020; Klöckner, 2013). This theory helps to understand the intention of an individual to behave at a particular time and place. In other words, this theory should explain all behaviors in which humans can control themselves. Three crucial factors, namely attitudes, subjective norms, and perceived behavioral control, are key components in this model.

Hill et al. (1977) define an attitude as a means to evaluate an individual's positive or negative feelings to respond consistently favourably or unfavourably regarding a particular object. The more an individual holds a positive attitude towards the behavior, the more likely he or she will intend to perform this behavior. For this study, an attitude refers to a student's favourable or unfavourable feelings to save for the future. Chudzian, J. et al. (2015) have found a positive attitude toward saving is one of the basic determinants of not prudent spending. Similar to Satsios and Hadjidakis (2018) findings, positive attitudes towards saving lead to saving intentions. In the case of intention to save, favourable feelings may influence decision-making, judgment, and action about the intention to save, which can lead to a positive outcome. In contrast, an unfavourable feeling is a negative response towards the intention to save. Therefore, this study proposed the following hypothesis:

H1: Attitude has a significant positive impact on the saving intention of students.

Subjective norms are an individual's perception of social pressure from others who are important to him. For instance, the perception of a relative's or friend's expectations influences the specific action to be performed (Ajzen, 1992). This means that if an individual thinks the relevant people expect them to engage in one particular behaviour they are more likely to commit that behaviour. In this context, the subjective t norm reflects the value of the environment, social pressure from family and friends, and culture may encourage individuals to save rather than to consume. Previous studies showed that subjective norm towards savings was associated with intention to saving (Widjaja et al., 2020; Widyastuti et al., 2016). Following hypothesis is proposed;

H2: Subjective norms have a significant positive impact on the saving intention of students.

Other constructs initiated by Ajzen (1991) under TPB are perceived behavioral control (PBC). PBC relates to an individual's belief that behaviour of interest is easy or difficult to accomplish. Perceived behavioural control varies across situations and actions, resulting in a person's perception of behavioural control changing depending on the situation. Saving requires a higher degree of control over themselves. In this study, PBC is about how the individual controls his desire from unnecessary spending in order to save to meet his future needs. The more he can control the desire to spend, the more money he can save and vice versa. For students, this suggests that a person's beliefs about how hard to save money influences the likelihood of performing this behavior. Gao et al. (2017), as well as Satsios and Hadjidakis (2018), found perceived behavioural control has significant positive effects on intention to save. PBC can be measured by asking questions about the capability to perform the behavior. Hence, this study proposed the following hypothesis:

H3: Perceived behavioural control positively affects the saving intention of students.

Inclusion of Mobile Applications assessments as a moderator

A moderator analysis is applied to determine whether the relationship between two variables is affected by the value of a third variable. Moreover, this study assesses whether mobile applications moderate the relationship between attitude, subjective norms, and perceived behavior control towards intention to save. Mobile applications refer to innovative communication channels that allow users to use mobile devices to perform activities related to financial services, such as transferring money, checking bank account status, or making payments (Loaba, 2021). When mobile applications are used, the relationship under TPB

constructs towards intention to save becomes stronger. In other words, the attitude toward saving will increase if one person is using mobile applications. This is due to the features of the mobile application that will make him more organized and feel more favorable to save. Ouma et al. (2017) claimed that the features of mobile applications such as secure, accessible, reliable, and less expensive attract and encourage the users to use them.

In terms of subjective norms, mobile applications may influence someone to save money as nowadays the public are using mobile applications use mobile applications in daily life. The number of mobile applications available in the market keeps growing (Shaikh & Karjaluoto, 2015). Moreover, using mobile applications may help someone manage their budget and thus will encourage them to save. Furthermore, with automatic saving applications, it's becoming easy to transfer money for savings saving becomes easily transferred, consequently increasing their savings. This was reported by Deb et al. (2020), revealing that mobile applications significantly influence saving intention.

In the context of perceived behaviour control, using mobile applications will help the individuals control their behaviour from overspending, thus increasing their motivation to save. Loaba (2021) examined the impact of mobile financial services on West African saving behaviour. The findings revealed that, the possibility of having formal savings increases if an individual used mobile financial services. Thus, this study extends the study done by Loaba (2021) by applying the planned behavior theory construct and adding mobile application as moderating effects to examine students' attention towards savings. This study proposed the following hypothesis:

H4a: Mobile applications positively moderate the relationship between attitude and students' saving intention.
H4b: Mobile applications positively moderate the relationship between subjective norms and students' saving intention.
H4c: Mobile applications positively moderate the relationship between perceived behavioral control and students' saving intention.

Methodology

The research hypotheses were tested using questionnaire survey data collected from Mechanical students in Community College Kelana Jaya, Community College Pasir Salak, Community College Sungai Petani, and Community College Bandar Darulaman. The researchers contacted Student Affairs from the targeted institutions to request consent to distribute the questionnaire. Once the approval is received, researchers conduct the survey in their online classrooms. Before the students responded to the questionnaire, they were given a briefing on the study's purpose, asked to define each of the questions, and were assured of the confidentiality of their answers. The average time they took to complete the survey for each class was about twenty minutes. There was a total of 117 respondents who responded to our survey questionnaire. The main reason for focusing on the student was because of their significant future contribution to the country. Moreover, the student had a lack of financial literacy (Sabri & MacDonald, 2010), and studies done by Delafrooz and Paim (2011) and Moreno-Herrero et al. (2018) claimed that students' financial literacy plays an important role in understanding the value of saving.

Instrument Development

The items on the questionnaire were adapted from the previous studies (Chudzian, J., Anioła-Mikołajczak, P., Pataraia, 2015; Worthington et al., 2012; Pearlin & Schooler's 1978) (refer appendix A). The survey questionnaire comprised of four sections. Section 1 gathered general

information about the respondents' socio-demographic status. Section 2 was about the questions to assess the attitude towards the saving intention. Section 3 was about the questions to evaluate the subjective norm and saving intention. Section 4 is on questions to determine the perceived behavior control and saving intention. The last section measured the influence of mobile applications on the intention to save. All questions were designed using five-points Likert scale ranging from one (1) strongly disagree to (5) strongly agree and changed to suit the students' saving behavior context.

The present study focuses on exploring the association of TPB on intention to savings by including mobile applications as a moderator variable among students. The research framework (figure 1) has been constructed based on theories and previous findings (Ajzen & Driver, 1992; Loaba, 2021; Satsios & Hadjidakis, 2018).

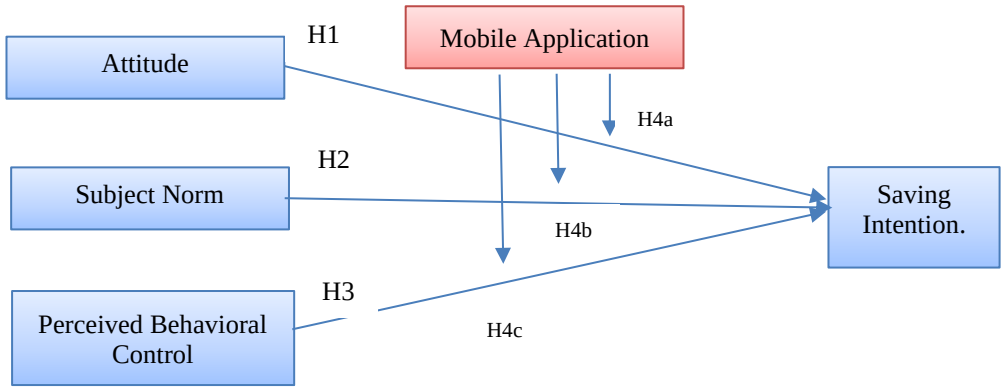

Figure 1: Research Framework

Data analysis and Results

Demographic data

Table 1 shows demographic data for respondents. Of the 117 students analyzed in the survey, 96.6% of the respondents were male, clearly outnumbered the female 3.4% respondents. Most of the respondents aged fell into the age group of 20 to 29 (70%), followed by the aged 17 to 19 (40%). The lowest age group was 30 to 40 (1%). Notably, the largest group that participated in this study is Malay, which stands at 94.9%, closely followed by Indian (4.3%) Chinese (0.9%). Two programs involved in this survey were the Certificate of Servis Kenderaan Ringan (98%) and the Diploma in Automotive Technology (19%). Four Community College involved Community College Kelana Jaya, Community College Pasir Salak, Perak, Community College Sungai Petani, Kedah and Community College Bandar Darulaman, Kedah. Table 1 reported the demographic data of the respondents.

Table 1: Profile of the respondents

Variable	Frequencies	Percentage
Gender		
Male	113	96.6
Female	4	3.4
Age		
17-19	46	39.3
20-29	70	59.8
30-40	1	0.9

Race		
Malay	111	94.9
Chinese	1	0.9
Indian	5	4.3
Program		
Sijil Servis Kenderaan Ringan	98	83.8
Diploma in Automotive Technology	19	16.2
Community College		
Community College Pasir Salak	17	
Community College Kelana Jaya	38	
Community College Sungai Petani	29	
Community College Bandar Darulaman	37	

Measurement Model Analysis

To assess the measurement model, a reliability and validity analysis were conducted. As seen in Table 2, after removing 1 item from attitude and 1 item from saving intention, Cronbach's alpha of all study constructs are above the recommended level of 0.708. Additionally, all Composite Reliability scores are greater than the recommended level of 0.500 (Hair Jr et al., 2016). Finally, indicator reliability scores reveal that outer loadings of the items are fairly acceptable, as seen in Figure 2. Accordingly, we conclude that the data is reliable enough for structural analysis.

Table 2: Testing results of reliability

	Cronbach's Alpha	**Composite Realibility**	**Average Variance Extracted (AVE)**
Attitude	0.740	0.826	0.509
Perceived Behavior Control	0.742	0.833	0.560
Subjective Norms	0.835	0.883	0.606
Mobile Applications	0.941	0.951	0.737
Saving Intention	0.686	0.816	0.560

Besides, convergent validity is assessed using AVE scores. They are displayed in Table 2. As seen, all AVE scores are greater than the minimum acceptable level of 0.500. And finally, discriminant validity is assessed using cross-loadings criteria. As seen in Table 2-3, all loadings of the items on their constructs are greater than their cross-loadings on the other constructs. Therefore, we conclude that all reliability and validity requirements are fully satisfied.

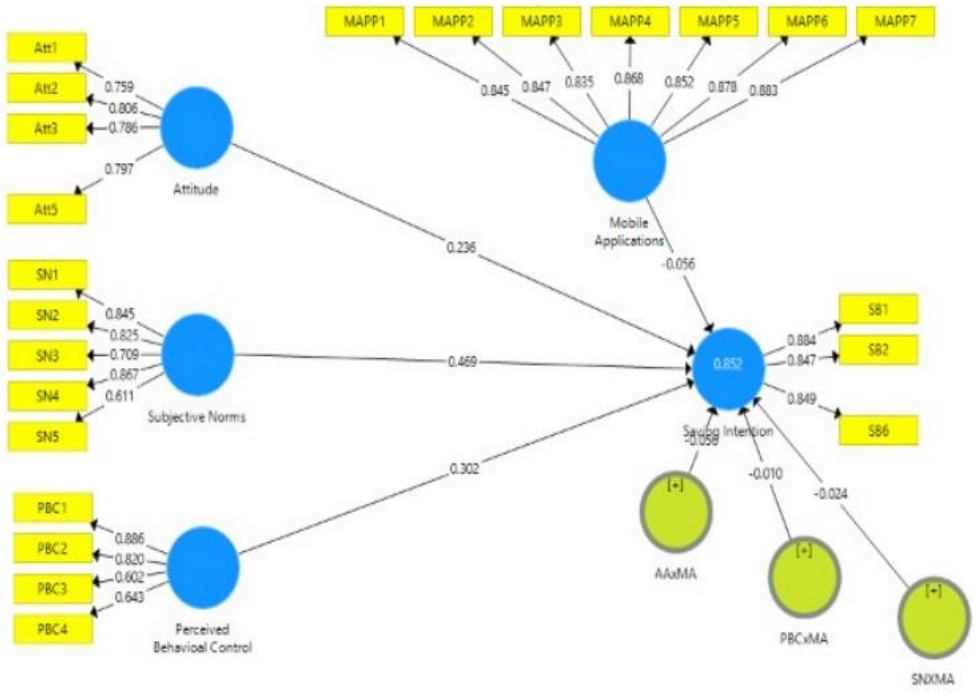

Figure 2: Reliability and Validity Analysis

Table 3 Cross Loadings (Discriminant Validity)

	Attitude	Mobile Applications	Perceived Behavioral Control	Saving Intention	Subjective Norms
Att1	0.759	0.466	0.469	0.47	0.494
Att2	0.806	0.554	0.545	0.502	0.52
Att3	0.786	0.547	0.575	0.649	0.676
Att5	0.797	0.524	0.626	0.571	0.654
MAPP1	0.534	0.845	0.583	0.577	0.598
MAPP2	0.496	0.847	0.605	0.504	0.544
MAPP3	0.673	0.835	0.697	0.687	0.647
MAPP4	0.501	0.868	0.625	0.482	0.576
MAPP5	0.606	0.852	0.66	0.602	0.581
MAPP6	0.591	0.878	0.663	0.627	0.687
MAPP7	0.574	0.883	0.666	0.567	0.637
PBC1	0.658	0.638	0.886	0.847	0.706
PBC2	0.588	0.642	0.82	0.646	0.601

PBC3	0.396	0.465	0.602	0.392	0.458
PBC4	0.414	0.499	0.643	0.33	0.389
SB1	0.645	0.573	0.616	0.884	0.867
SB2	0.658	0.638	0.686	0.847	0.706
SB6	0.786	0.547	0.575	0.849	0.676
SN1	0.599	0.579	0.617	0.736	0.845
SN2	0.676	0.611	0.615	0.69	0.825
SN3	0.582	0.461	0.544	0.534	0.709
SN4	0.645	0.573	0.616	0.884	0.867
SN5	0.46	0.599	0.541	0.436	0.611

Descriptive statistic

Table 4 demonstrates the mean, standard deviations, and correlations of the variables. This study performed the variance inflation factor (VIF) to assess multicollinearity for each explanatory variable. According to Belsley et al. (2005), the value of VIF should be below 10. The value of VIF ranged from 2.428 to 3.127, which means there is no multicollinearity in the model. This study also performed the Pearson correlation analysis to determine the relationship between all variables (Saunders et al., 2009). Based on Table 3, there are significant positive correlation between attitude (r=0.720, p=000), subject norm (0.771, p=000), perceived behavior control (r= 0.801, p=000) and mobile application (r=0.654, p=000) towards saving behavior.

Table 4: Mean, standard deviation, and correlation matrix of all variables.

Variables	Mean	Std Dev.	VIF	A	B	C	D	E
Attitude (A)	4.1346	0.64706	2.428	1	.738**	.665**	.649**	.720**
Subjective Norm (B)	4.1709	0.65246	3.127	.738**	1	.725**	.730**	.771**
Perceived behavior control (c)	4.0085	0.67269	2.712	.665**	.725**	1	.734**	.801**
Mobile application (D)	4.0171	0.74258	2.690	.649**	.730**	.734**	1	.654**
Saving Behavior (E)	4.0698	0.66459		.720**	.771**	.801**	.654**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Structural Model Test

PLS Bootstrapping was used to test the proposed relationships. The output reveals that all direct effects were significant, but the moderating effects were not significant.

Table 5: PLS Bootstrapping Results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
AAxMA -> Saving Intention	-0.056	-0.087	0.084	0.662	0.508
Attitude -> Saving Intention	0.236	0.245	0.054	4.34	0.000
Mobile Applications -> Saving Intention	-0.056	-0.075	0.083	0.672	0.502
PBCxMA -> Saving Intention	-0.01	-0.02	0.08	0.119	0.905
Perceived Behavioal Control -> Saving Intention	0.302	0.309	0.078	3.871	0.000
SNXMA -> Saving Intention	-0.024	0.014	0.084	0.287	0.774
Subjective Norms -> Saving Intention	0.469	0.472	0.069	6.779	0.000

Discussion, conclusions, and limitations

The aim of the study was to examine the relationship between TPB constructs towards saving intentions and determining the moderating effect of mobile applications. Based on the research data finding, the attitude had a significant positive impact on intention to save of the Community College students. This suggested that students with positive attitudes were more likely to have a greater intention to save money. The result was consistent with the findings of Widjaja et al., (2020), Chudzian et al. (2015); Kisaka, (2014) as well as Satsios and Hadjidakis (2018). It was found that subjective norm also had a positive and significant effect on the saving intention of the Community College students. This means that if someone who is important to him saves, he is more likely to develop a favourable feeling toward saving and turn these intentions into action. Our results are in line with the previous studies Widyastuti et al. (2016), Gao et al. (2017), and Zheng et al. (2019). Perceived behavioral control is determined by control beliefs on how easy or difficult it is to save. It can be based on a person's own experience as well as the experiences of friends and family members with this behavior. The results for the perceived behavioural control showed a positive statistical effect for saving intention, which means that self-control has an impact in explaining the behaviour. This finding agrees with previous studies (Gao et al., 2017; Chalimah et al., 2019; Du & Pan 2021) in explaining how the student controls his desire from unnecessary spending in order to save to meet his future needs.

The authors want to test whether mobile applications moderate the relationship between TPB constructs towards intention to save. In particular, mobile applications will further strengthen this relationship, thus increasing the intention to save. However, the results indicate that mobile apps did not moderate the relationship between attitude, subject norm, and perceived behaviour control towards saving intention. This suggested that using mobile apps does not increase students' motivation to save, even though mobile applications offer service customers in a better way. In conclusion, it can be predicted that students who have a positive attitude towards saving, strong subjective norms, and high perceived behavior control are more likely to form the intention to save for their future. This finding has some limitations that should be addressed

in the future. The current study is based on respondents from Mechanical students at Community College. Most of the gender is male. Future study needs to be carried out on other programs and various demographic variables.

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Appendix A: Items in Questionanires

Construct	Measurement items	References
Attitude	Saving gives me a sense of security. Saving means constant sacrifice and parsimony. I think saving money makes me a better person. Saving is for poor people. Saving means constant sacrifice and parsimony.	Chudzian, J., Anioła-Mikołajczak, P., Pataraia (2015)
Subjective Norm	My colleagues think that I should save for the future. My parents think I must save regularly. Others who are important to me think I should save for unexpected expenditure. My lecturers would want me to save for my future. I feel social pressure to save.	Gao, L., Wang, S., Li, J., & Li, H. (2017).
Perceived behavior control	I think that I am capable of saving for the future. I have the knowledge and skills to save. Whether or not saving is entirely up to me. I save only because I have to.	Ajzen (2002); Satsios and Hadjidakis (2018)
Perception towards Mobile Applications	Learning to operate mobile apps is easy for me. Mobile apps allow me to manage my finances efficiently. It enables the use of mobile apps anywhere and anytime. Mobile apps give me greater control over my saving. I trust the transaction conducted through mobile apps are secure and private. I think mobile apps will fit my lifestyle. Interaction with mobile apps does not require a lot of mental effort.	Chawla and Joshi (2018)
Saving Behavior	I have saved money for unexpected expenditures In the past six months, I have frequently saved money Besides the money I have already saved, I still save regularly I also save money when I don't have a real saving goal I try to save something and spend the rest on daily needs I spend money on daily needs and save the rest	(Widyastuti et al., 2016)