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The Influence of Financial Quantitative Literacy and Subjective Numeracy on Impulsive Consumption with Materialism as the Mediator Variable

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Abstract

Marketers always optimize their marketing strategies so that the consumers are affected to make purchase decisions. Consumers are all the time exposed to visually appealing and well-displayed products as well as captivating promotions. This intrigues them to buy the products impulsively. The present research aimed to investigate the factors of impulsive consumption, namely materialism, financial quantitative literacy, and subjective numeracy. The research was conducted on 179 senior high school economics teachers in Special Region of Yogyakarta, Indonesia. Stratified random sampling was employed and the data were gathered from July 2017 to January 2018 and were analyzed using WarpPLS 5.0. The results showed that the influence of materialism was positive and significant on impulsive consumption; the influence of financial quantitative literacy was negative and significant on impulsive consumption; materialism partly mediated negative influences, which was significant for impulsive consumption; the influence of subjective numeracy was negative and not significant on impulsive consumption; materialism fully mediated the negative influences; and influence of subjective numeracy was significant on impulsive consumption.

Keywords : impulsive consumption, materialism, financial quantitative literacy, subjective numeracy

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The gross regional domestic product (GRDP) of Special Region of Yogyakarta province in 2016 was IDR 29.59 million per capita. It increased by 7.31% compared to 2015's GRDP of IDR 27.57 million per capita (Statistics Indonesia, 2017). Domestic consumption dominated domestic expense with the distribution segment reaching 67.6% (Statistics of D.I. Yogyakarta, 2017). It surpassed the average percentage of national domestic expense component at 56.50% (Statistics Indonesia, 2017). The increase of domestic expense per capita in Special Region of Yogyakarta was 7.08% in 2016 compared to that of 2015.

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A survey conducted by Kompas (Setiawan, 2012) showed that Yogyakarta is one of the six big cities in Indonesia with a big number of the middle class, that is, 50.3%. From that result, half of the middle class group was the original member of the group. Yet, half of it was those elevating to the middle class from the lower class, and there were people who were downgrading from the middle class to the lower class. Most of the middle class groups were employees whose income was increased as an effect of government policy enforcement. They were easily influenced by the upper class lifestyle, such as having aspirations to go shopping. Therefore, it is not surprising that the consumption of goods increased : the purchase of motorcycles and cars, funding from banks for vehicle purchases, electronic goods, etc. The increase in purchase of electronic goods was dominated mostly by mobile phone purchases, which drastically increased in the last decade (Setiawan, 2012).

The rapid development of technology, indeed, gives many advantages on the one hand, and on the other hand, it increases the consumption desires. Marketers nowadays offer online selling and buying services. The transactions are so easy and quick. Numerous interesting goods and services are displayed online to attract consumers. Impulsive shopping is an unplanned purchase: sudden, strong, and steadfast desires ; urge to buy immediately ; spontaneous when finding a certain product ; followed by feelings of pleasure and excitement (Rook, 1987). Practically, consumers' behavior to purchase impulsively becomes one of the marketers' targets (Podoshen & Andrzejewski, 2012).

Impulsive buying is influenced by consumer's psychological aspects (Park & John, 2011). With psychological impulse, one feels to have certain 'power,' unavoidable desires, and suddenly has the tendency to behave without any consideration. Therefore, individuals who depend on acquisition of material goods/shopping as a source of their happiness and personal satisfaction will have the tendency to indulge in impulsive consumption, and they do not fully consider their financial implications (Nye & Hillyard, 2013). Nye and Hillyard's findings (2013) revealed that materialism positively influenced impulsive consumption, yet materialism and impulsive consumption negatively influenced financial behaviors.

There are two aspects in relation to impulsive consumption : cognitive and affective aspects (Verplanken & Herabadi, 2001). On the cognitive aspects, impulsive consumption is done as the result of lack of purchase consideration and planning. Consumers who employ their cognitive abilities will tend to make rational purchase decisions. They will buy goods that they really need as well as consider maximum values of the purchased goods. This value conception is commonly known as utilitarian consumption value. Meanwhile, on the affective aspect, consumers tend to be more emotional and purchase impulsively. As they shop, they satisfy their hedonic shopping gratification (Jain, Gautam, & Pasricha, 2018) such as having new experiences, finding variations, and pleasure. Researchers predict that impulsive buying is done by people who are influenced by their financial literacy levels.

Lusardi, Mitchell, and Curto's finding (2010) showed that there was a positive correlation between financial literacy measurement and cognitive abilities. To make a good decision of asset development or debt management, people need to have enough capacity to do simple and complex calculations (Lusardi, 2012). Nonetheless, cognitive abilities are considered not sufficient since people also need to have confidence in their quantitative abilities. Thus, both financial quantitative literacy and subjective numeracy are two important components of financial literacy. Nye and Hillyard's findings (2013) also revealed that financial quantitative literacy and subjective numeracy negatively influenced impulsive consumption.

This piece of research develops the research model conducted by Nye and Hillyard (2013) by reinvestigating the direct influence of financial quantitative literacy and subjective numeracy on direct and indirect impulsive consumption by materialism. The research was conducted among economics teachers in Special Region of Yogyakarta Province. Economics teachers are considered important since they are a part of the society whose income increased as an effect of government policy enforcement to improve teachers' professionalism for the last 11 years. For economics teachers, professionalism is not only measured by their mastery on the taught materials, but also by their economic behaviors as real actualization of their mastery. Djohar, Istiningih, Paidi, Purwanto,

Sukisno, Sudarinto, Sumardi, and Sudiyo (2009) reported that there was no difference in professionalism between teacher's former and latter behavior due to the stimulus of salary increment from a certification program. The certification policy tends to affect teachers' welfare instead of their competency development aspects (Wahyuni, 2015). This research result provided unsatisfactory information regarding the real purpose of a certification policy.

Review of Literature

(1) The Influence of Materialism on Impulsive Consumption : Materialism has a close relation to consumerism (Dittmar, 2007). Materialism is seen as orientations, behaviors, beliefs, and life values that place goods' ownership or material wealth over other life values: spiritual, intellectual, social, and cultural values (Kasser, 2002). Material - oriented people tend to have high intention to make use of their resources to obtain certain goods or materials. They believe that ownership of goods is the key to a better life (Dittmar, 2007 ; Kasser, 2002). Therefore, materialistic people tend to purchase material goods, wealth, beauty, luxury, and spend much money to purchase material goods in order to guarantee their social relationship and self-identity (Ahuvia, 2008 ; Goldsmith, Flynn, & Clark, 2011 ; Hudders & Pandelaere, 2012).

Materialism is manifested in complex behaviors. The behaviours on materialism are closely related to the values lived by a community group that are very likely to be different from other community groups. However, Moore and Berger (2015) showed that the behaviors on materialism directly affected the consumers' behaviours and marketing strategies. Strong desire to consume and fulfill their exaggerated and luxurious lifestyle demands the increment of goods production and resource exploitation. This situation is often utilized by marketers to persuade materialistic people to buy products. The materialistic people find it difficult to save money, are bad at financial management, and at the end, they are haunted by financial worries (Garðarsdóttir & Dittmar, 2012). Nye and Hillyard's research result (2013) gave a proof that materialism positively and significantly affected impulsive consumption.

⇒ H_1 : Materialism has a positive and significant effect on impulsive consumption.

(2) The Influence of Financial Quantitative Literacy and Materialism on Impulsive Consumption : Impulsive buying is stimulated by physical closeness to a product and strong desire to purchase that product. People's reaction to that stimulus is closely related to their low intellectual control (less evaluation on their needs, less reasonable reasons to purchase a product, less evaluation on possible consequences, sudden satisfaction caused by previous disappointment) as well as high emotional feelings (excitement and stimulation caused by product or situations and purchase processes) (Gąsiorowska, 2011). As a result, people easily do purchase activities out of their planning.

Hilgert, Hogarth, and Beverly (2003) found that there was a strong relationship between financial literacy and daily financial management. The better the financial literacy, the better the daily financial management will be. Bernheim (1995) showed that most households that lack basic financial knowledge are unable to do simple calculation regarding their behaviors to save. Financial literacy is also related to the set of other behaviors, such as savings, wealth, and portfolio selection (Lusardi & Mitchell, 2011) ; more financially literate people are more likely to be more willing to engage in stock investment (Almenberg & Dreber, 2015 ; Christelis, Jappelli, & Padula, 2010 ; Van Rooij, Lusardi, & Alessie, 2012 ; Yoong, 2011) ; and they are also likely to have more financial intelligence in choosing mutual funds as an investment, including choosing people (investment manager) at low cost (Hastings & Mitchell, 2011 ; Hastings, Mitchell, & Chyn, 2011 ; Hastings & Tejeda - Ashton, 2008).

Materialistic aspirations are identical to financial aspirations; those are aspirations to accumulate wealth and achieve material success (Kasser & Ryan, 1996). Both attempt to improve economic status. In their development,

the materialistic aspirations have a dominant side out of the financial aspirations, such as fame and image (Kasser, 2002). Prioritizing more on materialistic aspirations has a detrimental effect on well-being. Those who are motivated by extrinsic purposes will be easily triggered by external factors, namely pressure or others' recognition. Reversely, those who are motivated by intrinsic purposes will be not easily triggered by external factors since their life purposes are to give happiness and real self-fulfillment (Kasser, 2002).

Research on materialism has found that the high materialistic level arouses psychological, social, economic, academic, and environmental problems. High materialism is an antecedent to low well-being, unhappiness, no satisfaction with life, high stress, and depression (Brouskeli & Loumakou, 2014 ; Dittmar & Kapur, 2011 ; Garðarsdóttir, Janković, & Dittmar, 2008 ; Karabati & Cemalcilar, 2010 ; Konow & Earley, 2008 ; Tsang, Carpenter, Roberts, Frisch, & Carlisle, 2014) ; compulsive behavior and excessive buying (Dittmar, 2005 ; Müller, Mitchell, Peterson, Faber, Steffen, Crosby, & Claes, 2011 ; Pham, Yap, & Dowling, 2012) ; negative attitudes towards marriage and having descendants (Li, Patel, Balliet, Tov, & Scollon, 2010) ; dislike of savings and going to school - especially children, low motivation on intrinsic learning, high motivation on extrinsic learning, and low academic performance (Ku, Dittmar, & Banerjee, 2012) ; and low pro-environment attitudes and behaviors (Hurst, Dittmar, Bond, & Kasser, 2013 ; Kilbourne & Pickett, 2008). Hence, we hypothesize that :

☞ H_b : Financial quantitative literacy has a negative and significant effect on impulsive consumption.

☞ H_c : Financial quantitative literacy has a negative and significant effect on impulsive consumption by materialism as a mediator variable.

(3) The Influence of Subjective Numeracy on Impulsive Consumption : Research has showed that quantitative literacy promotes better decision making. However, according to Nye and Hillyard (2013), the abilities to operate numbers are not sufficient. People need to be confident and have a tendency to make use of their quantitative abilities. They likely understand costs and benefits, yet they fail to make correct financial decisions for their future. People who make decisions on taking loans, for instance, are likely mobilizing their quantitative abilities, but they are also likely to be extra careful and end up failing to make decisions because they are afraid for the future implications. According to Nye and Hillyard (2013), this shows that taking decisions is a disposition problem, and not only an ability problem. In other words, people need to encompass quantitative abilities and confidence to act out these abilities.

As a volitional behavior, impulsive behavior shows one's agreement to buy a product. Quite different from general buying, impulsive buying shows one's relatively fast buying decision making. Therefore, Gąsiorowska (2011) addressed that impulsive buying is non-reflective buying; it is not planned, is spontaneous, and is accompanied by a sudden desire to buy certain products as well as is manifested in stimulus reactions of certain products.

Individuals have different reactions to a product. In a study on impulsive consumption behaviors in multi-brand apparels in India, Kumar and Narayanan (2016) reported that impulsive consumption behaviors varied from age and gender. Quantitative literacy enables people to better understand costs and benefits at the moment to make financial decisions for their future, and subjective numeracy encourages them to be able to operate numbers, read the terms of financing, and interpret the information (Nye & Hillyard, 2013). Nye and Hillyard's findings (2013) showed that subjective numeracy had a negative effect on impulsive consumption. Hence, the following hypotheses have been framed :

☞ H_d : Subjective numeracy has a negative and significant effect on impulsive consumption.

☞ H_e : Subjective numeracy has a negative and significant effect on impulsive consumption by materialism as a mediator variable.

Research Methodology

(1) Research Setting and Sample : The research was conducted using the quantitative approach. The population was 349 senior high school economics teachers in Special Region of Yogyakarta who were civil servants at public schools and permanent teachers at private schools. Stratified random sampling was employed. Data gathering were carried out from July 2017 to January 2018. There were 179 teachers as the respondents who completed the research instrument (response rate = 98.351%).

(2) Data Gathering and Research Instruments : The data gathering instrument in this research was a questionnaire. The questionnaire was distributed directly to the chosen research sample. The questionnaire consisted of five parts, namely respondent's identity, impulsive consumption, financial quantitative literacy, subjective numeracy, and materialism.

(i) Impulsive Consumption : Impulsive consumption in this research is the unplanned buying done by economics teachers, which was manifested in a reaction towards a stimulus of a certain product. To measure the impulsive consumption level, the respondents were required to complete the Diagnostic Tool for Classifying Compulsive Consumers by Faber and O'Guinn (1992). The research instrument consisted of 14 items. Each item was rated using a 5 - point scale (1 = *never done* to 5 = *done very often*). Commonly, the lowest score showed high compulsiveness. In this piece of research, the measurement of impulsive consumption was conducted in a similar way as per Nye and Hillyard's research (2013). The questionnaire items were revised so that the higher score showed consumer's more impulsive behavior.

(ii) Financial Quantitative Literacy : Financial quantitative literacy is a measurement of one's ability to use basic quantitative tools to make good decisions on any financial choices. Quantitative literacy measurement in this research adapted the test developed by Nye and Hillyard (2013). Quantitative literacy indicators were measured based on calculation abilities, such as percentage, conversion unit, fares, and money value. The test consisted of 13 items. The score for the correct answer was 1, while the score for an incorrect answer was 0.

(iii) Subjective Numeracy : Subjective numeracy is one's confidence to make use of his/her quantitative abilities to support his/her decision making on financial issues. Subjective numeracy was measured based on the Subjective Numeracy Scale developed by Fagerlin, Zikmund - Fisher, Ubel, Jankovic, Derry, and Smith (2007) and validated by Zikmund-Fisher, Smith, Ubel, and Fagerlin (2007). There were two groups of subjective numeracy indicators, namely cognitive abilities and preference for display of numeric information. There were eight items in the research instrument. Each item was stated in six scales (1 = *very poor* and 6 = *very good*). The bigger scale showed that the respondents were more confident to make use of their quantitative abilities.

(iv) Materialism : Materialism is a measurement of how important it was for the economics teachers to have and buy goods or materials. The materialism dimension embraces success, centrality, and happiness (Richins & Dawson, 1992). In this research, materialism is measured based on the Material Values Scale developed by Richins and Dawson (1992) and Richins, Mick, and Monroe (2004). The instrument consisted of 15 statements and used seven scales (1 = *low materialism*, 7 = *high materialism*).

(3) Data Analysis Technique : The data in this research were analyzed based on SEM-PLS analysis (structural equation modeling - partial least squares) with WarpPLS 5.0.

Analysis and Results

(1) Descriptive Statistics : The descriptive data shows the following conditions: the mean of impulsive consumption score is 39.737 from the range of theoretical score 10 - 50 ; the mean of materialism scores is 38.687 from the range of theoretical score 10 - 70 ; the mean of subjective numeracy is 25.323 from the range of theoretical score 6 - 36 ; and the mean of financial quantitative literacy is 3.883 from the range of theoretical score 0 - 7 (Table 1).

(2) Measurement Model Analysis : This part elaborates the test results of convergent validity, discriminant validity, and reliability for the research instruments. Convergent validity tests or outer models are aimed to measure the indicators' correlation value of a construct. Convergent validity of a reflective construct is qualified if : (a) the loading value is greater than 0.70; and (b) it has a significant p ($p < 0.05$) (Hair, Black, Babin, & Anderson, 2009) or average variance extracted (AVE) value has to be greater than 0.50 (Fornell & Larcker, 1981).

The Table 2 provides the convergent validity test results for each indicator of the research constructs. Loading

Table 1. Descriptive Statistics of Research Variables

Variables	Theoretical Score		Actual Score		Mean	SD
	Min	Max	Min	Max		
Impulsive Consumption	10	50	10	48	39.737	6.612
Materialism	10	70	10	60	38.687	11.072
Subjective Numeracy	6	36	9	36	25.323	5.323
Financial Quantitative Literacy	0	7	0	7	3.883	1.541

Table 2. The Results of Test of Convergent Validity

Statements	SN*	FQL**	M***	IC****	Type (as defined)	SE	p - Value
How good are you at working with fractions ? (SN1)	(0.863)	0.020	0.049	-0.137	Reflective	0.063	<0.001
How good are you at working with percentages? (SN2)	(0.864)	0.073	0.057	-0.185	Reflective	0.063	<0.001
How good are you at calculating a 15% tip? (SN3)	(0.768)	-0.016	-0.130	0.261	Reflective	0.064	<0.001
How good are you at figuring out how much a shirt will cost if it is 25% off? (SN4)	(0.874)	0.002	-0.076	0.114	Reflective	0.063	<0.001
When reading the newspaper, how helpfull do you find tables and graphs that are parts of a story? (SN5)	(0.725)	-0.058	0.093	-0.176	Reflective	0.065	<0.001
How often do you find numerical information to be useful? (SN8)	(0.765)	-0.043	0.010	0.158	Reflective	0.064	<0.001
You want to purchase a television (HDTV) priced at \$800. If the sales tax is 8.5%, what is the final cost to you? (FQL2)	-0.055	(0.741)	0.090	-0.023	Reflective	0.065	<0.001
One US dollar exchanges for .75 euros. An American tourist pays 20 euros for an excellent dinner at a French restaurant. How much will this dinner cost in US dollars? (FQL3)	0.041	(0.759)	-0.008	0.169	Reflective	0.064	<0.001
Assume that you have \$1,000 to invest for a year. You invest half of your money in a savings account that earns an annual return of 1%, and you invest the other half in a safe investment that pays an annual return of 5%. Both	-0.017	(0.835)	-0.125	0.026	Reflective	0.063	<0.001

investments compound interest annually. How much money will you have at the end of the year? (FQL4)

Assume that you invest \$1,000 at an interest rate of 5%, compounded annually. If you invest for 3 years, approximately how much money will you have at the end of that time? (FQL5)	0.006	(0.794)	0.070	-0.135	Reflective	0.064	<0.001
Assume that Jack borrowed \$20,000 at an annual interest rate of 12% (compounded monthly). Jack will repay the loan with monthly payments of \$391.00 for 6 years. What total dollar amount will Jack pay over the term of the loan (interest & principal)? (FQL6)	0.057	(0.803)	-0.003	-0.053	Reflective	0.063	<0.001
If you borrowed \$100 for 4 weeks (28 days), what total dollar amount (principal and interest) would you be required to repay? (FQL9)	-0.089	(0.789)	0.093	-0.194	Reflective	0.064	<0.001
Suppose you take a loan of \$500. You can renew the loan as many times as you like. After how many weeks will your total interest fees exceed the original amount of your loan? (FQL10)	0.003	(0.760)	-0.036	0.261	Reflective	0.064	<0.001
I admire people who own expensive homes, cars, and clothes. (M1)	-0.032	-0.065	(0.711)	0.001	Reflective	0.065	<0.001
Some of the most important achievements in life include acquiring material possessions. (M2)	0.047	0.026	(0.792)	-0.335	Reflective	0.064	<0.001
I like to own things that impress people. (M5)	-0.034	-0.009	(0.793)	-0.294	Reflective	0.064	<0.001
I try to keep my life simple, as far as possessions are concerned. (M8)	-0.105	-0.029	(0.745)	0.253	Reflective	0.064	<0.001
I enjoy spending money on things that aren't practical. (M10)	0.070	-0.069	(0.745)	0.087	Reflective	0.064	<0.001
I like a lot of luxury in my life. (M12)	0.007	-0.093	(0.771)	0.233	Reflective	0.064	<0.001
My life would be better if I owned certain things I don't have. (M15)	-0.048	0.069	(0.754)	-0.109	Reflective	0.064	<0.001
I wouldn't be any happier if I owned nicer things. (M16)	0.084	0.069	(0.831)	-0.002	Reflective	0.063	<0.001
I'd be happier if I could afford to buy more things. (M17)	0.029	0.053	(0.827)	-0.124	Reflective	0.063	<0.001
It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like. (M18)	-0.013	0.057	(0.822)	0.074	Reflective	0.063	<0.001
If I have any money left at the end of the pay period, I just have to spend it. (IC3)	-0.194	-0.043	0.067	(0.776)	Reflective	0.064	<0.001
Made only the minimum payments on my credit cards. (IC4)	-0.072	0.080	-0.159	(0.709)	Reflective	0.065	<0.001
Wrote a cheque when I knew I didn't have enough money in the bank to cover it. (IC6)	0.000	0.088	-0.040	(0.746)	Reflective	0.064	<0.001
Just wanted to buy things and didn't care what I bought. (IC7)	-0.086	-0.018	-0.265	(0.719)	Reflective	0.065	<0.001
I often buy things simply because they are on sale. (IC8)	0.210	-0.188	0.048	(0.823)	Reflective	0.063	<0.001
Felt anxious or nervous on days I didn't go shopping. (IC9)	0.061	0.045	-0.146	(0.793)	Reflective	0.064	<0.001
Shopping is fun. (IC10)	-0.070	-0.106	0.300	(0.844)	Reflective	0.063	<0.001
Felt depressed after shopping. (IC11)	0.142	-0.013	-0.305	(0.835)	Reflective	0.063	<0.001
Bought something and when I got home I wasn't sure why I had bought it. (IC12)	0.113	-0.142	-0.036	(0.757)	Reflective	0.064	<0.001
Went on a buying binge and wasn't able to stop. (IC13)	-0.066	0.129	-0.165	(0.739)	Reflective	0.064	<0.001

Note: * Subjective Numeracy (SN); **Financial Quantitative Literacy (FQL); *** Materialism (M); ****Impulsive Consumption (IC). Loadings are unrotated and cross-loadings are oblique-rotated. SEs and *p* - values are for loadings ; *p* - values < 0.05 are desirable for reflective indicators.

Table 3. The Results of Test of Discriminant Validity

	Subjective Numeracy	Financial Quantitative Literacy	Materialism	Impulsive Consumption
Subjective Numeracy	(0.797)			
Financial Quantitative Literacy	0.060	(0.765)		
Materialism	-0.137	-0.033	(0.880)	
Impulsive Consumption	-0.284	-0.012	0.710	(0.834)

Note. Square roots of average variance extracted (AVE's) shown on the diagonal.

Table 4. The Results of Test of Reliability

Variables	Composite Reliability	Cronbach's Alpha
Subjective Numeracy	0.912	0.883
Financial Quantitative Literacy	0.752	0.723
Materialism	0.886	0.860
Impulsive Consumption	0.892	0.867

values of each indicator (shown by numbers in parantheses ()) are greater than 0.70 and the p - value is significant. In conclusion, indicators for impulsive consumption construct (IC), materialism (M), subjective numeracy (SN), and financial quantitative literacy (FQL) are qualified for convergent validity.

The research instrument has good discriminant validity if its indicators of different constructs have high correlation. Discriminant validity tests could be done by paying attention to cross-loading indicator values of one construct to another construct (Table 2) or by comparing the square root values of average variance extracted (AVE) for a construct with the correlation between this construct to other constructs in a model (Table 3). The Table 2 shows that each indicator's cross-loading value is lower than its loading value (numbers in parentheses). This shows that each indicator has fulfilled the discriminant validity. A model has sufficient discriminant validity if its AVE's root of each construct is greater than the correlation value between a construct and other constructs in a model (Chin, Marcolin, & Newsted, 2003). The Table 3 shows that the square roots value of average variance extracted (AVE) for each indicator of a construct (shown on diagonal) is greater than the correlation of this construct to other constructs. This is to say that the discriminant validity requirement for the indicators of each construct of this research has been met.

The reliability test is the stability or consistency measurement of an instrument based on a concept or variable (Hair, Black, Babin, & Anderson, 2009). The measurement could be conducted by paying attention to composite reliability values and Cronbach's alpha. Both have to be greater than 0.70, even though a value of 0.60 is still acceptable for exploratory studies (Fornell & Larcker, 1981 ; Hair et al., 2009 ; Nunnally, 1978). The Table 4 shows that the composite reliability value and Cronbach's alpha for all research instruments is greater than 0.70. Hence, the reliability requirements of this research have been met.

(3) Structural Model Analysis : Structural model analysis is employed to test the research hypotheses. The following is the structural model analysis used in this research.

(i) General SEM Analysis Results and Structural Model : Model fit indices and p - values present fit indicators, including : average path coefficient (APC), average R - squared (ARS), average adjusted R - squared (AARS), and average block VIF (AVIF), average full collinearity VIF (AFVIF), Tenenhaus GoF (GoF), Sympson's paradox ratio (SPR), R -squared contribution ratio (RSCR), statistical suppression ratio (SSR), and non - linear bivariate

Table 5. General Results

Model Fit and Quality Indices	
APC = 0.259	$p < 0.001$
ARS = 0.320	$p < 0.001$
AARS = 0.311	$p < 0.001$
AVIF = 1.072	Acceptable if ≤ 5 , ideally ≤ 3.3
AFVIF = 1.586	Acceptable if ≤ 5 , ideally ≤ 3.3
GoF = 0.308	small ≥ 0.1 , medium ≥ 0.25 , large ≥ 0.36
SPR = 1.000	Acceptable if ≥ 0.7 , ideally = 1
RSCR = 1.000	Acceptable if ≥ 0.9 , ideally = 1
SSR = 1.000	Acceptable if ≥ 0.7
NLBCCR = 0.900	Acceptable if ≥ 0.7

causality direction ratio (NLBCDR). The general criteria are commonly based on these three values : p value for APC and ARS which has to be lesser than 0.05 or significant and AVIF as multicollinearity indicators has to be less than 5. The Table 5 shows that APC ($p < 0.001$), ARS ($p < 0.001$), and AVIF (≤ 5) values and other criteria demonstrate that the goodness of fit model of this research has been met.

(ii) Latent Variable Coefficients : One of the important WarpPLS outputs is the output latent variable coefficients. The Table 6 shows the estimation result values, such as determinant coefficient, instrument reliability, discriminant validity, full collinearity test, and predictive validity. The R -squared value for impulsive consumption is 0.560, which means that 56.0% of compulsive consumption variance could be elaborated by materialism, financial quantitative literacy, and subjective numeracy. Meanwhile, R -squared value for materialism is 0.080, which means that 8.0% of materialism variance could be elaborated by financial quantitative literacy and subjective numeracy variances. Values for composite reliability and Cronbach's alpha reveal that the research constructs have reliability values that are generally classified very high. Average variance extracted (AVE) values for impulsive consumption, materialism, subjective numeracy, and financial quantitative literacy are greater than 0.5. It means that convergent validity requirement for each construct indicator has been met (Fornell & Larcker, 1981 ; Hair, Black, Babin, & Anderson, 2009 ; Nunnally, 1978). Full collinearity VIF value shows that the full collinearity test result includes vertical multicollinearity (among predictor variables) and lateral multicollinearity (between latent predictor variables and criterion variables). Full collinearity VIF value has to be below 3.3 (Kock, 2013). Full collinearity VIF test result is below 3.3, which means that this research

Table 6. Latent Variable Coefficients

	Subjective Numeracy	Financial Quantitative Literacy	Materialism	Impulsive Consumption
R -squared			0.080	0.560
Adj. R -squared			0.077	0.552
Composite reliab.	0.912	0.752	0.886	0.892
Cronbach's alpha	0.883	0.723	0.860	0.867
Avg. var. extrac.	0.636	0.585	0.776	0.695
Full collin. VIF	1.104	1.109	1.046	1.084
Q -squared			0.102	0.584

Table 7. Path Coefficients and P - Values

	Impulsive Consumption		Materialism		Subjective Numeracy		Financial Quantitative Literacy	
	β	P	β	P	β	P	β	P
Impulsive Consumption	0.665	<0.001	-0.085	0.123	-0.184	0.006		
Materialism			-0.197	0.003	-0.162	0.013		
Subjective Numeracy								
Financial Quantitative Literacy								

model is free from collinearity issues: both vertical and lateral collinearity. Q - squared is used to measure predictive validity or relevance of latent predictor variables on criterion variables. A research model has good predictive value if the Q - squared value is greater than 0 (Kock, 2013). The estimation results of this research model are 0.102 and 0.584, which means that this research model has good predictive validity.

(iii) Path Coefficient and p - Values : The Table 7 shows that the coefficient value of effects of materialism on impulsive consumption is positive and significant ($\beta = 0.665$; $p < 0.001$). It means that the higher the materialism, the higher is the impulsive consumption. Coefficient value of effects of financial quantitative literacy on impulsive consumption is negative and significant ($\beta = -0.184$; $p = 0.006$). It means that the better the financial quantitative literacy, the lower is the impulsive consumption. Coefficient value of effects of subjective numeracy on impulsive consumption is negative and not significant ($\beta = -0.085$; $p = 0.123$). It means that the better is the subjective numeracy, the lower is the impulsive consumption; yet, it is not significant. Coefficient value of effects of financial quantitative literacy on materialism is negative and significant ($\beta = -0.162$; $p = 0.013$). This means that the better is the financial quantitative literacy, the lower is the materialism. Coefficient value of effects of subjective numeracy on materialism is negative and significant ($\beta = -0.197$; $p = 0.003$). This means that the better the subjective numeracy, the lower the materialism.

(iv) Direct and Indirect Effects and the Research Model : Direct and indirect effect testing is an important part of mediation testing. Using WarpPLS program, the calculation of direct and indirect effect coefficient values as well as significant values could be conducted more efficiently. The Table 8 shows direct and indirect effect values for financial quantitative literacy and subjective numeracy variables towards impulsive consumption. Before financial quantitative literacy is inputted to this research model, the coefficient value of effect of direct subjective numeracy on impulsive consumption is -0.633 and is significant ($p < 0.001$). However, after financial quantitative literacy is inputted to the research model, the path coefficient value of effect of direct subjective numeracy on impulsive consumption is down to -0.184 and is still significant ($p < 0.01$). The total effect of financial quantitative literacy on impulsive consumption by materialism is -0.292 (direct effect value = -0.184 and indirect effect

Table 8. Direct and Indirect Effects

Independent Variables	Dependent Variable	Direct Effects	Indirect Effects	Total Effects
Materialism	Impulsive Consumption	0.665		0.665
		($p < 0.001$)		($p < 0.001$)
Financial Quantitative Literacy		-0.184	-0.108	-0.292
		($p < 0.01$)	($p = 0.019$)	($p < 0.001$)
Subjective Numeracy		-0.09	-0.131	-0.221
		($p = 0.12$)	($p = 0.006$)	($p < 0.01$)

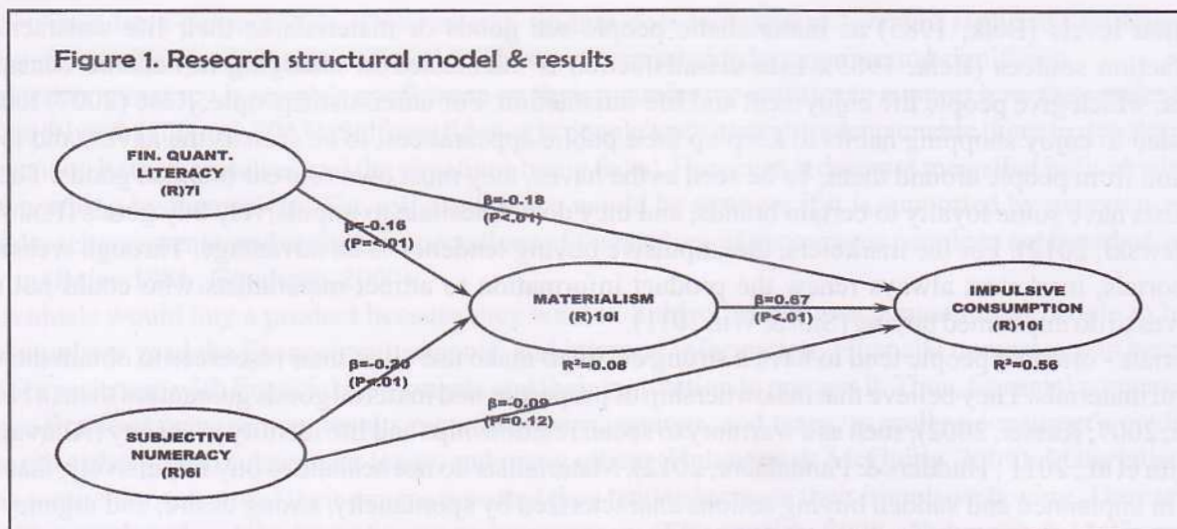


Table 9. Hypotheses Testing Results - Summary

Hypothesis		Result (Supported/Not Supported)
H _a :	Materialism has a positive and significant effect on impulsive consumption.	Supported
H _b :	Financial quantitative literacy has a negative and significant effect on impulsive consumption.	Supported
H _c :	Financial quantitative literacy has a negative and significant effect on impulsive consumption by materialism as a mediator variable.	Supported
H _d :	Subjective numeracy has a negative and significant effect on impulsive consumption.	Not Supported
H _e :	Subjective numeracy has a negative and significant effect on impulsive consumption by materialism as a mediator variable.	Supported

value = -0.108). It means that materialism has partial mediation in the influence of financial quantitative literacy towards impulsive consumption. Thus, the research hypothesis is still supported, but there can be other variables that could mediate outside the research model. Meanwhile, the effect of subjective numeracy on impulsive consumption shows that before subjective numeracy is inputted to the research model, the coefficient value of direct subjective numeracy's effect on impulsive consumption is -0.363 and is significant ($p < 0.05$). However, after subjective numeracy is inputted to the research model, the path coefficient value of direct subjective numeracy's effect on impulsive consumption is down to -0.09 and is not significant ($p = 0.12$). The total effect of subjective numeracy on impulsive consumption by materialism is -0.221 (direct effect value = -0.09 and indirect effect value = -0.131). It means that materialism has full mediation in the influence of subjective numeracy towards impulsive consumption. The structural model analysis of the research is presented in the Figure 1. The research structural model analysis results are summarized in the Table 9.

Discussion and Conclusion

The research results show that materialism has a positive and significant effect on impulsive consumption. It means that the higher the materialism level, the higher is the impulsive consumption level. This research result is supported by previous research conducted by Nye and Hillyard (2013), Podoshen and Andrzejewski (2012), Sun and Wu (2011), Rose (2007), and Belk (1985). Materialism was found to have a negative relation with life

satisfaction levels (Belk, 1985) as materialistic people see goods or materials as their life satisfaction and dissatisfaction sources (Belk, 1985). Life dissatisfaction is manifested in indulging in hedonic consumption activities, which give people life enjoyment and life satisfaction. For narcissistic people, Rose (2007) found that they tended to enjoy shopping habits to keep up their public appearances, to be seen as the haves, and to obtain admiration from people around them. To be seen as the haves, they must own or wear branded goods. Therefore, materialists have some loyalty to certain brands, and they do not hesitate to impulsively buy goods (Podoshen & Andrzejewski, 2012). For the marketers, the impulsive buying tendency is an advantage. Through websites and online portals, marketers always renew the product information to attract materialists who could not control themselves to do unplanned buying (Sun & Wu, 2011).

Materials - oriented people tend to have a strong desire to make use all of their resources to obtain the wanted goods and materials. They believe that the ownership of properties and material goods guarantees them a better life (Dittmar, 2007; Kasser, 2002), such as a warranty to social relationships and life identity in society (Ahuvia, 2008; Goldsmith et al., 2011; Hudders & Pandelaere, 2012). Materialists do not hesitate to buy impulsively, that is, they indulge in unplanned and sudden buying actions characterized by spontaneity, strong desire, and urgency to buy products, followed by happiness and excitement (Rook, 1987). Sudden buying represents one's relative speed to make the buying decisions without planning or as per desires prior to buying (Gąsiorowska, 2011).

The research results show that the direct effect of financial quantitative literacy on impulsive consumption is negative and significant. It means that the better the financial quantitative literacy, the lower is the impulsive consumption. Meanwhile, the indirect effect of financial quantitative literacy on impulsive consumption is also negative and significant. However, the path coefficient value of direct financial quantitative literacy effects on impulsive consumption are down, which means that materialism has partial mediation. In other words, there are other variables that mediate financial quantitative literacy's effects on impulsive consumption. This finding is supported by Nye and Hillyard's findings (2013) showing that financial quantitative literacy has negative and significant effects on impulsive consumption.

The quality of financial decisions determines the level of financial security and one's life standards. Bad financial decisions lead the households into debts and lower life standards (Lerman, 2006) as well as lead to negative social consequences and impact the society's economic life (Mien & Thao, 2015). The role of qualitative literacy in making decisions has been widely studied. Lipkus and Peters (2009) presented some evidences that people who had higher quantitative literacy would be directed to better healthy choices. Specifically, it was identified that there are six calculation functions for decision making based on prior studies documenting that people with better calculation abilities would be able to make better decisions: be able to do simple calculations, be able to compare numbers, and be able to make less errors in arithmetic operations; be able to find and pay attention to presented numeric information before making decisions; be able to interpret and evaluate the given numbers correctly; be able to measure probability; be able to critically think about the presented data, accept reasonable data and decline unreasonable data; and be able to change behaviors.

Those who find it difficult to use basic quantitative tools and are less informed about finance alternatives are more likely to make wrong decisions. These decisions would yield low results and burden their financial condition in a long term. Quantitative literacy, therefore, is very important. Quantitative literacy would encourage people to make good decisions on any financial choices (Gilliland, Melfi, Sikorskii, Corcoran, & Melfi, 2011; Huston, 2010; Lusardi & Mitchell, 2007). Thus, people with good financial quantitative literacy would tend to avoid materialism and impulsive consumption.

The research results also show that the direct subjective numeracy effects on impulsive consumption are negative and not significant. It means the higher the subjective numeracy, the lower the impulsive consumption, yet it is not significant. Meanwhile, the indirect subjective numeracy effects on impulsive numeracy by materialism are negative and significant. Materialism has partial mediation in financial quantitative literacy's

effects on impulsive consumption. This research finding does not support Nye and Hillyard's findings (2013), showing effects of subjective numeracy on impulsive consumption to be negative and significant.

Subjective numeracy is people's confidence on their quantitative abilities to support how they make financial decisions (Nye & Hillyard, 2013). Self-confidence is people's positive attitude to enable them to develop positive assessment on both, themselves and the situations being faced. However, it does not mean that individuals are able to do everything by themselves. The self-confidence would be stronger if it is supported by experiences, actual potentials, achievements, and realistic expectations of themselves. It encourages people to act based on what they believe in (Baier, 1986 ; Gambetta, 2000).

Individuals would buy a product because they want it. Subjective numeracy encourages people to be able to operate numbers, read the finance requirements, and interpret information. Financial numeracy can be improved through experiences with financial instruments and their motivation to process it. Thus, financial numeracy would influence financial management results regarding loans, savings, and taxes, as well as consumer's credit scores, interest rates charged on subsequent loans, and many others (Huhmann & McQuitty, 2009). Materialism lowers people's motivation to control their expenses so that they tend to increase their impulsive buying. They tend to not have self-control so they take loans for excessive expenses (Fitzmaurice, 2008 ; Huhmann & McQuitty, 2009). This often makes consumers deal with credit default, especially consumers with credit cards (Alex & Raveendran, 2011).

Materialistic people are not likely to have sufficient self-control over their behaviors and intentions (Sheeran, 2002), including intentions to buy. Intention is a function of individual and social factors. The determinants of individual factors are attitudes toward behavior. These attitudes are positive and negative beliefs and affection evaluation to a certain intended behavior. Meanwhile, social factors are subjective norms related to prescriptive normative perception. It is one's perception on social pressures (others' beliefs) that influences the intention to do or not to perform a certain behavior. Jain et al. (2018) showed that hedonic shopping gratification, sale proneness, visual product aesthetics, price consciousness, and consumer spending self-control were the determinant factors of impulsive buying for young consumers in India. Moreover, Mukhopadhyay and Johar (2005) and Kivetz and Keinan (2006) reported that people with bad self-control would be led to buy hedonic goods, have better recreation, and not be able to optimize buying properties and goods for future investment purposes.

Practical Implications

The research portrays the impulsive consumption level of economics teachers in Special Region of Yogyakarta and shows its influential factors. From the research results, it can be seen that the impulsive consumption average level of economics teachers was classified as high. This is not an encouraging condition with regard to the teachers' long-term well-being. Financial quantitative literacy has a direct effect on impulsive consumption and indirect effect on materialism, while materialism fully mediates subjective numeracy's effects on impulsive consumption. Hence, the economics teachers need to be accustomed to budgeting their consumption for individual and family financial management, listing the consumed goods every month to prevent unplanned buying, purchasing in cash, and reducing payment using debit and credit cards as a self-restriction on shopping, and being critical by always asking and being rational in determining the individual or family priority needs as per their financial resources.

Managerial Implications

The research findings support the previous research reported in literature. The Ministry of Education needs to conduct systematic financial education or training for economics teachers to improve their financial quantitative literacy and subjective numeracy as well as to control materialistic behaviors. These activities can be done in

partnership with Financial Service Authority or can invite professional practitioners: financial planners who have basic knowledge of psychology or the psychologists who have financial education. The Ministry of Education needs to conduct seminars or scientific discussions routinely as a means of knowledge refreshment for economics teachers. These activities benefit them to improve cognitive knowledge so that they can make rational decisions, especially buying decisions.

Limitations of the Study and Suggestions for Future Research

The research has some limitations. First, it was conducted only among economics teachers who work as civil servants in public schools and permanent teachers in private schools, while there are numerous non-permanent teachers both in public and private schools. Non-permanent teachers were not included as the sample since they do not receive teaching guarantees every semester or receive enough salary from their profession as teachers. Therefore, the research cannot be generalized to all economics teachers in Special Region of Yogyakarta Province. Second, this is a quantitative research, which employed a questionnaire for gathering the data. Obviously, deeper information could have been gained from the questions. Hence, to follow up, qualitative research needs to be conducted. Future research needs to include other impulsive consumption factors, such as situational environmental factors (physical environment, social environment, task definition, and antecedent state), marketing environmental factors, cultural factors, personal factors, and many more.

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