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Examining the effects of materialism on compulsive buying from 2013 to 2015 using meta-analysis approach

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Abstract: This study is conducted for meta-analysis of studies done on the effect of materialism on compulsive buying from 2013 to 2015. The study population is the studies on compulsive buying. From among 70 studies in this area, some of which are related to psychology, economics, and marketing, we diagnosed 5 cases in marketing proper for meta-analysis. Research method in inferential statistics is meta-analysis. We have used Comprehensive Meta-Analysis (CMA) software to analyze the collected data. The results have shown a small effect of materialism on compulsive buying.

Keywords: compulsive buying, materialism, meta-analysis

INTRODUCTION

The study of consumer behavior has a special importance and place in marketing policies. Owners of goods and services spend a lot costs to gain the opinion of the customers through marketers. Human behavior is incredibly complex, so complex that there are many theories to explain it. As at any moment and in any place, many factors are involved in a particular behavior, in fact, behavior of humans shapes the life of the person in relation to others and oneself (Raayi et al., 2011). One of the main topics of marketing is consumer behavior, which is affected by various factors including cultural, social, personal, and psychological. In the past, the tendency to purchase and consumption patterns was just limited to meeting minimum basic needs such as food and clothing, but in modern societies shopping and consumption are phenomena that can be defined with new patterns. People's buying has multiple patterns, which is affected by social and personal characteristics such as education level, economic status, social relationships and environment. Advertising, environmental factors, the use of colors and new models, and applying psychological factors can be effective in intensifying the motivation. One of the interesting topics in marketing and consumer behavior is consumer purchasing decisions, which can have both positive and negative aspects in welfare of the individual and society. Although considerable efforts have been made to understand the extreme use of different materials and all kinds of behaviors and extremist activities (e.g., addiction to alcohol and drugs, excessive use of drugs, gambling, etc.), there is very little information about this type of extreme use in territory of buying behavior (Taheri Kia & Naderi, 2012)

The dark side of consumer behavior in marketing has become a major growing issue studied through multiple studies of investigating compulsive buying and its outputs. Compulsive buying can be described as a repeated buying behavior that usually appears due to negative feelings and emotions. Although high costs are spent on this issue, the results of the studies are not consistent and sometimes the results are contradictory in studies. In fact, we cannot find the value of each of the above-mentioned factors, so we get help from methodological review (meta-analysis) for this issue to achieve tangible results. In fact, the purpose of this analysis and integration of previous studies is unifying those studies using statistical methods (Zahedi & Mohammad, 2005).

The existence of great differences in sample selection, community, independent and dependent variables, statistical methods in experimental designs, and the lack of coherence and coordination have made the use of meta-analysis methods essential. This becomes more difficult when the number of studies increases steadily and sometimes contradictory or even different conclusions are reached (Delawar, 2002). Due to the rapid growth of science, researchers are faced with a large volume of information. Faced with this scientific explosion and for rapid and accurate extraction of information, it is required that people search resources in a structured way. This helps minimize possible biases and reduces errors. On the other hand, meta-analysis is the use of special statistical methods to find the most accurate form of relationship between the variables. These statistical methods help the assembly of various articles and summarize them objectively, so that personal opinions have no effect on this process (Ahmadvand, 2001). Moreover, we try to review the research conducted accurately to determine possible similarities and differences between the studies. Concerning the importance of this issue, it suffices to mention that individuals, psychologists, and organizations spend a lot of time and money for the review and treatment of compulsive buying, but still the real factors affecting the disorder are not known. We have a pile of insufficient information, to solve which we sometimes conduct another study on compulsive buying, while one can use previous studies with meta-analysis albeit incomplete, and by recording their features and combining findings in form of quantitative concepts using appropriate statistical methods, resolve the need to study the issue again and reach integrated results.

2. Review of literature and theoretical basics

2.1. Compulsive buying

Compulsive buying is defined through mental obsessions related to buying that describes an intense and irresistible tendency to buy and what to buy and repetitive buying regardless of negative consequences. According to Winston et al., (2014), there are three main features for compulsive buying including:

1. Consumers experience an uncontrollable desire or tendency to buy.
2. Consumers cannot control themselves in buying.
3. Regardless of the bad effects on their lives, consumers continue shopping socially and financially.

McElroy et al. (1994) proposed diagnostic criteria for compulsive buying that usually includes the following (Duroy et al., 2014):

1. Uncontrollable purchase behaviors
2. Purchase behaviors that contribute to depression, long consumption time and financial, social, and work problems
3. Purchase behaviors not justified through mental disorders

In general, different definitions of compulsive buying in various studies are as follows:

1. Compulsive buying behavior is generally an uncontrollable desire for frequent and unnecessary buying that is hard to stop, so that would lead to harmful consequences (Said Eren et al., 2012).
2. Compulsive buying is an irresistible and powerful desire to buy goods and appliances where the consumer has developed an attitude like drug addicts towards purchase (Lejoyeux & Weinstein, 2010).
3. Compulsive buying is defined as repetitive and chronic buying behavior in response to negative emotions and events (Williams, 2012).
4. Compulsive buying is specified as an abnormal shape of consumer behavior that cannot be controlled even by the person (Shahjehan et al., 2012).
5. Compulsive buying is an addictive shopping where consumers do not buy based on need and requirements and has negative consequences for both the individual and the community (Joireman, 2010).
6. Compulsive buying is a compulsive behavior that usually begins through incentives such as tension and stress (Weinstein et al., 2014).

7. Compulsive buying is defined as a chronic and repetitive buying that is an initial reaction to negative sentiment that creates a short-term and immediate satisfaction, but in the end, it harms the person or others (Taheri Kia & Naderi, 2012).

8. Compulsive buying is a repeated, consistent, and everlasting purchasing behavior that turned to an initial call or reaction to events or negative emotions (Quoquab et al., 2013).

2.2. Materialism

To cope with known feelings of inadequacy and low self-esteem, people are involved in compulsive buying. Moreover, in general, compared to the ordinary consumers, compulsive buyers are more emotional and, in particular, are more likely to develop negative scenarios, such as boredom, sadness and anxiety before making a purchase. It is also mentioned that compulsive buyers desire to endorse material values, so that their identity and confidence depend on the amount and type of material possessions in their lives .

According to the definition by Belk, materialism is the importance that a consumer attaches to material assets. At the high levels of materialism, the desire for wealth and property is placed in the center of one's life and can be a source of satisfaction and dissatisfaction in life. He also believes that acquisition is a part of human existence and is a means of individual expression (Belk, 1985). Thus, when people feel that buying a product might bring them appraisal or position, they are unable to resist the temptation to buy it, even at the cost of long-term economic demands. Thus, overbuying due to materialism is defined as equity overbuying (Taheri Kia & Yadegari, 2013).

3. Methodology

In this paper, given the purpose of research, we have used meta-analysis method. Meta-analysis is a statistical method for quantitative analysis and combining the results of similar studies independent of each other. This research approach helps the researcher greatly reach the right mix of contradictory and conflicting results of previous studies and explain the contradictions. Meta-analysis is a valuable method for putting together the results of different studies in the past. Based on several studies, meta-analysis implementation process includes the following steps:

1. The definition of the variables of interest
2. Collecting and searching for literature or reporting previous studies
3. Extracting information and calculating effect size of previous studies
4. Analysis of data collected from previous studies (Yazdani et al., 2014)

The main hypothesis of this study is combining and comparing separate findings of the studies conducted in the context of the impact of materialism on compulsive buying during the years 2013 and 2015 and finding the actual impact of materialism on compulsive purchase and getting a consistent result out of scattered results of studies using powerful statistical methods. Thus, as mentioned in the steps of meta-analysis, it is required to determine an effect size for each study.

4. Findings

In this meta-analysis, to assess publication bias, we used graphic method (Funnel Plot) and a statistical index (Number of missing studies that would bring p-value to $> \alpha$). Most meta-analysis studies are based on two models: fixed effects model and random effects model. To determine the final model of meta-analysis, a set of heterogeneity analyses should be done to ensure the existence of moderating variables. We used two indices Q Cochran and square I to determine the heterogeneity. According to both homogeneity indexes, it was showed that moderating variables have a significant role in the relationships between materialism and compulsive buying, so we chose this stochastic model as the model for meta-analysis. To calculate effect sizes and statistical activities in connection with the composition of the results, we used CMA software version 2.

As noted, 5 studies conducted on the indicators of materialism and compulsive buying and were eligible for analysis were selected, the specifications of each of which are presented in Table 1:

Table 1: The sizes of the impact of studies on the effect of materialism on compulsive buying

Researchers	Year	Number of samples	Effect size
Rastgar, A.A., Siyah Sarani Kojouri, M.A.	2015	380	0.157
Ardakani, S., Naderi Bani, M., Gorji, S.	2015	367	0.293

Taheri Kia, F., Yadegari, M.	2013	6080	0.563
Astrid Müller, LaurenceCl	2014	102	0.234
Grant Donnelly	2013	1077	0.424

In meta-analysis statistical techniques, as in most other statistical methods, before analyzing the data, it is necessary to examine the presumptions. Of the most important presumptions are no outliers and the normality of the data. In meta-analysis to eliminate outliers effect size, we use sensitivity analysis. In this method, the effect of outliers and extreme measures are identified, removed, and analysis is repeated. Therefore, in this study, to detect studies with publication bias, we used funnel plots. In fact, publication bias is non-publication of studies with insignificant findings. If there is no publication bias, the graphs are symmetrical and scatter around the intervention effect size is reduced with increasing samples.

After the initial analysis, since the figure was obtained symmetrical for each of the components, sensitivity analysis method using a funnel graph was used. In Figure 1, the general format of this graph is visible:

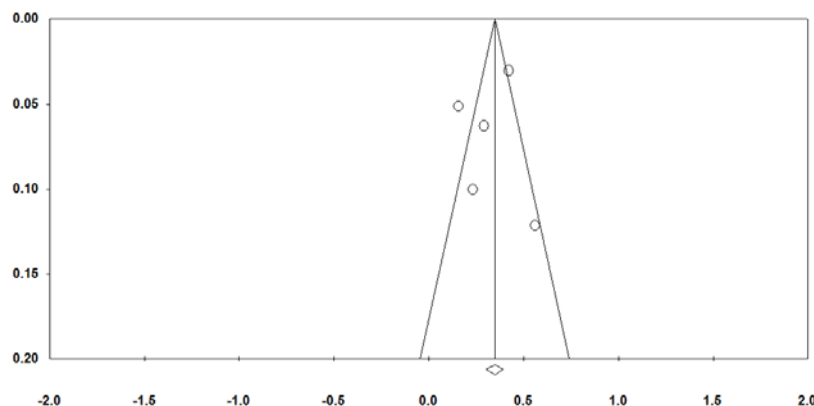


Figure 1: Funnel plot of publication bias in initial research

In funnel charts, the horizontal axis represents values due to the size of the initial research and the vertical axis is standard error. Publication bias can be detected by the funnel-time graph where the points around the diagram are not distributed symmetrically that is due to very large quantities of size effect and large standard error. As is clear in Figure 1, there are no studies with outliers and unusual effect sizes, so funnel plot is symmetrical. In addition, based on number of missing studies that would bring p-value to $>\alpha$ after entering of 208 zero effect size to meta-analysis, calculated combined effect size is insignificant. This high number reflects the reliability of the effect sizes of research. Therefore, there are no extreme measures to remove, and in further analysis, these effect sizes would be used.

On the other hand, to study the heterogeneity of effect sizes in primary research, we used Cochran Q and square I. As can be seen in Table 2, the index value Q for 5 effect sizes with 4 degrees of freedom is statistically significant. Significance of Q indicates the presence of heterogeneity in effect sizes of early studies, but since this index is sensitive to increased number of effect sizes and by increasing the size of the effect of this test, the power of this test to reject homogeneity increases, square I is another index, which is used for this purpose. This square has a value of zero to a hundred, and indeed indicates heterogeneous size in percentage. The closer this value closer is to 100, it indicates more heterogeneity of effect sizes of primary research. Therefore, I square show that 84% of the distribution of materialism in the initial size of the actual research work is due to moderating variables, and based on the criteria by Higgins et al., which define indices 0.25, 0.50, and 0.75 as low, medium and high heterogeneity, the initial indices obtained show high heterogeneity in primary research.

Table 2: Indicators of heterogeneity in effect sizes between basic research

Index	Q Cochran	Degrees of freedom	Significance level	I square
Materialism and compulsive	25.016	4	0.000	84.010

buying				
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According to both homogeneity indices, it was showed that moderating variables have a significant role in effect of materialism on compulsive buying. Accordingly, given the heterogeneity in effect sizes, random effects model was selected as meta-analysis model and the size of the combined effect was considered the same value and the results of analysis is visible in table 3.

Table 3: The combined effect of fixed effects model and random effects related to the impact of materialism on compulsive buying

Model	The number of effect size	The size of the combined effect	Confidence level 95 percent		Z	P
			Lower limit	Upper limit		
Fixed	5	0.334	0.293	0.374	15.019	0.000
Random	5	0.313	0.185	0.430	4.667	0.000

Given that the main goal of any meta-analysis is combining numerical indices of primary research in the form of an overall indicator, most meta-analyses are based on two statistical models: fixed effect model and random effects model. In fixed effects model, it is assumed that there is an actual effects size that is the basis of all analyses, and all differences in effect size observed in preliminary studies are due to sampling error. In contrast, the random effects model, it is assumed that the real effect size differs from one study to another changing. One of the main reasons for this change is the existence of confounding variables in the relationship between the dependent and independent variables. Thus, as the results of the homogeneity test were significant, in this study, the results of the random effects model are reported. As can be seen, the combined effect size calculated for the random effects model for components is equal to 0.313, in which all components are statistically significant ($P < 0.01$). On the other hand, Cohen has offered a general interpretative classification for the relative importance of the effect size. In studies of this kind, where the differences of the groups are examined, the effect sizes 0.2, 0.5, and 0.8, respectively, show small, medium and large effect sizes. Thus, one can state that the effect of materialism on compulsive buying is a small effect size.

Discussion and conclusion

This study is the first meta-analysis conducted on studies of compulsive buying. From among 70 papers studies in this regard, we selected five papers for meta-analysis, which had studied the common assumptions and significant positive impact of materialism on compulsive buying. In these five articles, 8006 cases had been investigated. In this study, in summary, to eliminate outlier effect size, we used sensitivity analysis. In this method, the effect of outliers and extreme measures are identified, removed, and analysis is repeated. The results of the initial analysis have shown that there are no unusual and outlier sizes and the funnel graph are symmetric. On the other hand, to study the heterogeneity of effect sizes in primary research, we used Cochran Q I square. The results show that Q value is 25.016 for 5 effect sizes with 4 degrees of freedom is statistically significant. Q significance indicates the presence of heterogeneity in effect sizes of early studies, but since this index is sensitive to increased number of effect size and with increase in the size of the effect of this test to rule out homogeneity is high, I square is another index, which is used for this purpose. This square has a value of zero to one hundred, and in fact, shows the amount of heterogeneity in percentage. I value is equal to 84.010 showing that 84% of the distribution of materialism in the early studies effect size is real and due to the moderating variables. According to the results of the two indices, Q Cochran and I, of heterogeneity, it was found that the moderating variables have a significant role on the impact of materialism on compulsive purchase. Accordingly, given the heterogeneity in effect sizes, random effects model was chosen as meta-analysis model. Finally, the combined effect size calculated for components of the random effects model is equal to 0.313, in which all components are statistically significant, and small effect of materialism on compulsive buying sizes is shown.

This study has some limitations. It seems that the biggest limitation of this study is the small number of eligible articles in the meta-analysis. Thus, sufficient data to evaluate the effect of materialism on compulsive buying was not provided. If one can expand the references studied in the meta-analysis and in addition to

articles use thesis and research projects, more accurate results can be achieved. Moreover, this study showed research deficiencies in compulsive buying that could be the basis for future research. By reviewing the studies, it was showed that the researchers have studied the impact of different variables on compulsive buying, but it is not accurately specified which variables have the greatest influence on compulsive buying. Moreover, the number of shared variables affecting compulsive buying is very low and reviewable, hence, the researchers are recommended study effects of more variables on compulsive buying with meta-analysis approach and introduce variables with larger effect sizes.

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