ATTITUDE TOWARDS SOLID WASTE MANAGEMENT BEHAVIOR AMONG THE MERCHANTS IN THE CENTRAL MARKET OF AGRICULTURE PRODUCT, THAILAND

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Abstract- This study was conducted in the central Market of Agriculture Product, Thailand to examine the factor influencing solid waste management behavior among the merchants in this market. The dependent variable was attitude of solid waste management and independent variable was solid waste management behavior. The data obtained were subjected to statistical analysis to determine the relationship between solid waste management attitude and solid waste management behavior through chi-square test and logistic regressions. The results revealed that solid waste management behavior was significantly affected by attitude of solid waste management.

I. INTRODUCTION

Developing countries is now facing solid waste management problem which will lead to negative impacts on environment, public health and safety issues. Generally, Inefficiently Solid waste management causes dirtiness and nuisances including odors, flies, and blowing litter that causes an aesthetic problem and solid waste can contaminate in the environment by waste disposal lead to transfer of substances from the solid waste to air, water and soil that will effect to the environment, such as environment pollution, soil and water, and power generation from gas landfill Moreover, source of solid waste may enhance infected vectors which can spread infectious disease to people (1,2). Solid waste is one of environmental problem which is the present issue in Thailand. Recently, Thailand has evolved from rural to urbanize industrial community, the number of population in urban area is increasing rapidly and, the economic growth has improved the standards of living of the urban population. Thus, people are more likely to change their pattern of consumption of goods (3). Hence, the number of solid waste generated in Thailand has been rapidly increasing the amount of solid waste every year. Markets are the main source of solid waste which contributes about 20% of waste generation; they are the second largest generator of solid waste after household (4). They generate large number of organic waste, food waste, plastics, paper, and other types of solid waste. The central Market of Agriculture Product is the largest Market of Agriculture Product in Thailand which provides service to approximately 50,000 customers per day. In each day, Central Market of Agriculture Product generates solid waste approximately 120 tons Therefore; it is necessary to reduce market waste generation by focusing on solid waste management of the merchants in this market. This study aims to examine the attitude variable towards to solid waste management among the merchants in this market. The result of this study will provide for their decision making, especially on conducting solid waste management activities in the central market of agriculture product, Thailand.

II. METHODOLOGY

This cross-sectional study was carried out in the Central Market of Agriculture Product, Thailand to examine attitude towards solid waste management behavior among the merchants in this market.
The stratified random sampling method was used for data collection based on population distribution. The sample in this study involved merchants who had been selling product in this market at least 1 year and only the respondents who are the owners of shops or stalls were invited to complete the questionnaire. The self-administered questionnaires were distributed to 355 merchants between May to June 2015 and 350 questionnaires were returned. This was about 99% of total respondents in the sample. The questionnaire focused on attitude of solid waste management and solid waste management behavior among the merchants in the central market of agriculture product, Thailand. Data was assessed by using the statistical package for social science software. Chi-square and multiple logistic were used to find the relationship between independent and dependent variables.

III. RESULT AND DISCUSSION

General characteristic of respondents were provided in table 1. According to the questionnaire, the

majority of the respondents or 61.40 % were female. Most of them 78.80 % were less than 50 years old. The average age of respondent was 39.9 years old. Based on respondent background, the education level were various among the respondents. Most of respondent 26 % were educated in secondary school and university. More than half of respondents (59.7 %) had been selling products in this market less than 10 years. The average monthly income per merchants was 92,300 baht and half of them (59.10%) had income less than 50,000 baht per year. The result showed that 57.7% of respondent were selling fruit and 22.6 % are selling vegetable. Moreover 10.9% are selling flowers and plants, 5.4 % are selling rice and dry crop and only 3.4 % are the owner of grocery shops.

Table 1 Number and percentage of socio-demographic factors

Factors	Number	Percentage
Female	215	61.40
< 50 years old	276	78.80
< 50,000 baht per month	207	59.10
< 10 years of commerce	209	59.70

According to the attitude of solid waste management, the respondents were asked total 12 items which about solid waste generation, solid waste separation, solid waste storage, solid waste collection, solid waste transfers and transportation and solid waste disposal. The merchants were asked if they think that at the present time, solid waste in this market is the problem that needs to be solved rapidly. Half of respondents were agree about it. When the merchants were asked what they thought about solid waste can also cause health problem and there are estimated at 40.6 % of respondents that agree with this statement. The merchants were asked if they though it is not necessary to separate solid waste because the reason is it need to spend more time and money but there are estimated at 44.9 % were disagreed with this reason and when they were further asked that solid waste separation is not their duties, it is the central market of agriculture product responsibility .Most of them (43.1 %) were disagree with this point too. They though they should separate waste and solid waste separation is their duties and they should help solid waste pickers their waste to separated their waste before throw them away. Merchants were further asked if they supported that solid waste management is only responsibility of the central market of agriculture product and they do not have any responsibility in this but most of them (33.7 %) were disagree with this opinion and nearly half of them (45.1 %) thought that the central market of agriculture product should inform the merchants about the method and time for solid waste collection, transfer and transportation. For solid waste reduction issue, the majority (40.9%) said that using fabric bags and baskets instead of plastic bags and foam can decease amount of solid waste generation and 47.4 % of respondents were agree with the campaign of appropriate solid waste management which can encourage good attitude of cleanliness. When asked about what they thought about discarding solid waste on the floor cannot cause any problem and also easy to collect the waste. Most of respondents were not agree with this statement and most of them (36.6%) also disagree with the opinion that they can collect all type od the solid waste in the same garbage bin because for reducing the time and cost. Respondents were further asked if they though disposal solid waste according to their types is the proper way that can solve environmental problem. Most of them (47.4%) were agree with this point. As was shown table 2 Attitude level was categorized into 2 levels and the result showed that half of respondents (52 %) had high level of attitude.

Table 2 Number and percentage of samples classified by level of attitude of solid waste management

Level of attitude	Number	Percentage
Low level of attitude	28	8
High level of attitude	322	92

In order to study about solid waste management behavior, we measured merchant's behavior in term of their response to solid waste reduction at source, reuse and recycling. Respondents were asked about their solid waste management behavior. The resulted that showed that most of respondents 89.4% were discard waste only into the garbage bin and only 3.4 % discard their on the floor. Most of the respondents 48.3 % were sometimes discarded all of their waste into the same bins and only 15.7% never do this. The majority of them (41.7%) were discard their waste into the storage container when it is already excessive filled. Most of Merchants (48%) were also answered that they poured the water from wet waste and wrapped it tight before litter it while other 24% said they never do and most of respondents (63.4%) never litter their waste on the floor because it was easier to collect and also saved time while another 9.4 % of them said that they always litter waste on the floor. When they wanted to litter their waste but there is no garbage bin nearby, most of them (71.4%) were never litter them on the floor and only 21.7 % were sometimes litter waste on the floor. For the separation behavior, most of them (56.6 %) sometimes separated their solid waste and there are 29.4% and 14.0 % said that never and always, respectively. Forty eight percent of people who had separated their waste sometimes separated newspaper, boxes and cardboard from other type of waste for reusing them again and 49. 7% said that always reused their old clothes or piece of clothes as rag or hand towel and 45.7 % of respondents reported that sometimes, they separated their waste such as plastic bottles, paper cardboard and glass bottles or selling. If they had hazardous waste, most of them (43.3%) were always separated them from other and only 16.6 % never separated

them. Merchants were asked if they see solid waste was on the floor or road, most of them (49.1%) sometimes pick it up and litter it in the garbage bin and there are 39.7% and 1.1 % for always and never, respectively. A half of respondents (50%) were sometimes looked after their employee about their solid waste management behavior and only 14.6% never did that.

Table 3 illustrate that behavior level was categorized into 2 levels: poor and good behavior and it was found that most of them (62.60%) had poor behavior.

Table 3 Number and percentage of samples classified by level of solid waste management behavior

Level of attitude	Number	Percentage
Poor behavior	219	62.60
Good behavior	131	37.40

According to the measurement of attitude towards the solid waste management behavior, it refers to the evaluation, positive or negative, the merchants have on their behavior, it reflects their opinion on the outcome of that behavior and how they evaluate this outcome. (5) Chi- square was used to analyze the relationship between solid waste management attitudes towards solid waste management behavior. Finding indicates that respondents who had high level of attitude had better behavior in solid waste management and it found a significant association between these two variables (Chi-square = 13.80, $p < 0.05$). Logistic regressions were carried out to explore the effect of attitude of solid waste management toward solid waste management behavior and it revealed that attitude is significant association to solid waste management behavior (OR: 2.96; 95 % CI: 1.10 – 7.98). In this study, solid waste management behavior refers to the response of the merchants according to solid waste reduction, reuse and recycling in the central market of agriculture product, Thailand. From the result of the study, the merchants who had good attitude about solid waste management were 3 times more likely to have good behavior in solid waste management so it means that the merchant who had better attitude in solid waste management had better solid waste management behavior. This research examine attitude towards solid waste management behavior and the result could be discussed as following description. The finding indicated that there was significant association between attitude of solid waste management and solid waste management behavior. The merchants who had good attitude about solid waste management are had better behavior in solid waste management.

Table 2 the association between attitude of solid waste management towards solid waste management

Attitude level	n	Solid waste management Behavior (%)		Crude OR	95% CI
		poor	good		
Low	28	10.50 %	3.80 %	1	1.10 -
High	322	89.40 %	96.20 %	2.96	7.98

These relations support result from previous researches A previous study stated that people's attitude can effect to the patterns of material use and significant to the quantities of solid waste generation so the reduction of solid waste generate will occur when people are willing to change their own habits and lifestyle to conserve national resources (6, 7). As the previous researches mentioned that attitude is related to number of solid waste generation and the way that they use materials so the merchant who had good attitude, they willing to change their behavior into better behavior by find the way to minimize the uses of material and also reducing the number of solid waste generation from their commercial activities. In addition, the merchants intend to separate their solid waste in to recycling waste and non-recycling waste which they can reuse some material again and also for selling. According to the study of waste management and recycling behavior in Korea, It was found the similar results that attitude variable is significant to the solid waste behavior in term of separation and recycling behavior (8). and other study also support the result that it was found the link between attitudes and recycling behavior as well (9) moreover, from previous study which measured the attitudes toward recycling behavior of 452 people, it also found the relationship between positive attitudes toward the recycling behavior (10) and a previous research was examined factors that affect solid waste management behavior and the result showed that attitude affected recycle and waste management behavior significantly. In addition, attitude was a strong variable to predict waste management behavior (8). People with good attitude they will separate their waste before discarding their waste for reusing and selling some material.

CONCLUSION

Based on the result and discussion obtained from questionnaires at the Central market of agriculture product, Thailand can be concluded that this study was conducted to examine the attitude of solid waste management towards solid waste management behavior among the merchants in this market. As the result revealed there were significant association between attitude and solid waste management behavior. From the previous studies, they mentioned that since attitude is the factor that is related to solid waste behavior so educational program should be conducted for enhancing sustainable pro-environmental attitude and another research also supported that the best way to promote positive attitude is to improve education of people (11,12). As the theory of planned behavior states that attitude is the factors influencing people's intention to recycling behavior (13) Hence, In order to implement the project promoting solid waste management behavior, attitude of the merchants toward the solid waste management behavior should be considered and the

project should raise the positive attitude about solid waste management in the merchants because attitude is the strong factor to predict the solid waste management behavior.

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