

**CAT LITTER PRODUCTS IN THAILAND: A CONSUMER  
SURVEY AND EXPERIMENTAL TEST OF PRODUCT  
PERFORMANCE**

The seal of Mahidol University is a circular emblem. It features a central blue circle containing a golden Thai-style crown (Chhatra) with a flame-like base. This central circle is surrounded by a white ring with Thai script. The entire seal is set against a light beige background.

**EKKARAT MEEPHUMRU**

**A THEMATIC PAPER SUBMITTED IN PARTIAL  
FULFILLMENT OF THE REQUIREMENTS FOR  
THE DEGREE OF MASTER OF MANAGEMENT  
COLLEGE OF MANAGEMENT  
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Thematic paper  
entitled  
**CAT LITTER PRODUCTS IN THAILAND: A CONSUMER  
SURVEY AND EXPERIMENTAL TEST OF PRODUCT  
PERFORMANCE**

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Ekkarat Meephumru

# **THE KEY FACTORS THAT INFLUENCE PEOPLE BEHAVIOR TO BUY CAT LITTER PRODUCTS**

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M.M. (ENTREPRENEURSHIP MANAGEMENT)

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## **ABSTRACT**

This research studies the factors that influence Thai cat owners to select and buy a cat litter product through a survey of cat lover communities. Further, the survey shows the Top 10 cat litter brands that Thai cat owners usually buy. Then in an experiment the study measures and tests the performance of these Top 10 products in terms of Dust, Clumping ability, and Odor control. There are a lot of cat litter product in the market with similar purpose but different significant features and materials. However, the advertised features and their packaging are almost the same, which makes it difficult for consumers to distinguish and select a cat litter product to buy for their cat. The experiment conducted in this research uses the same environmental variables when testing the products, including cats, cat food and raise activities, to provide evidence about the performance of each product, and finally compares it with the top 10 brands consumer survey result.

Keywords: Cat Litter / Cat Thailand / Cat Lover Community /  
Raise Cat / Experiment

54 pages

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## **CHAPTER I**

### **INTRODUCTION**

Nowadays, we could say pets are considered like family members in many families in the world, also in Thailand. Pets can be varieties of animals; dogs, cats, fish, birds, turtles, rabbits, rodents, etc. When people raise pets and take care of them, they have to be aware of many aspects. First, pet owners need to pay attention to food selection, how much they should eat in 1 day or is enough for them in 1 day, how much nutrients they should consume in 1 day, etc. Second, the habitat or cage suited for pets, or my home is good enough to raise them? Third, another important aspect for pet owners is to take care of their pet's cleanliness and hygiene.

The research topic of this thematic paper came from personal experience when I began to raise cats indoor. When you raise a cat indoors, you really need to have a place for them to excrete, and you must use sand and a cat litter product together. The abilities of them to collect cat waste and bad smell is better than using only general sand. There are a lot of cat litter brands in the market with similar purpose but different significant features and materials. However, the advertised features and their packaging are almost the same, which makes it difficult for consumers to distinguish and select a particular cat litter product to buy for their cat.

#### **1.1 Research Question**

The research question is to explore and find the factors that influence Thai cat owners to select and buy a cat litter product. Further, to find out the Top 10 cat litter brands in the Thai market that Thai cat owners usually select. Finally, the purpose is to measure and test the performance of these Top 10 products in terms of Dust, Clumping ability, and Odor control. This should provide cat owners with independent information about the attributes and performance of the cat litter products available in the market

## **1.2 Research Background and Expected Benefits**

The research question came from personal experience and survey of cat lover communities in Thailand. The purposes of this research is to help those who are still raising a cat or interested to raise them, to have better information to decide for their cat, about what the ability and performance of each cat litter brand in the Thai market is. Due to Thailand has a big cat communication, if they have a chance to see this research, the information might help and resolve their problems, or they can find what product is suited for their cat and home. The research also provides some important information for people that they should know if they raise a cat, regarding hygiene and cat litter products.

## **1.3 Research Scope**

The research method will consist of a survey of the members of cat lover communities in Thailand, about 102 respondents, to find the most popular top 10 cat litter brands. Further, the survey will measure potential factors that influence Thai cat owners to select and buy a cat litter product, how often do they change and use cat litter, and the quantity that they consume.

Then we run and experiment to test the Top 10 cat litter products, by using the same environment variables including cats, cat food and raise activities to measure the performance for each cat litter brand. Finally, we compare test performance with the Top 10 brands survey ranking among Thai consumers.

## **CHAPTER II**

### **LITERATURE REVIEW**

#### **2.1 Where did cat litter come from?**

In 1947, after WORLD WAR 2, people started raising cats indoor and used a sand box or furnace ashes as cat toilet. But they had a problem about cats tracking sand or ashes through their house (American Society for the Prevention of Cruelty to Animals,). The problem was solved by a business-man, Edward Lowe. He suggested a neighbor to fill granulated clay in a box – an industrial absorbent of his father’s company, originally used to soak up oil and gasoline spill. The neighbor found that the material was great in absorbing their cat’s urine, but still not clump. Then he had an idea to sell the clay product in 5 pounds bag under name “Kitty litter” which made him to be a multimillionaire(Jennifer Sellers) (Paul Ford, June 2014) (Robert MCG. & Thomas JR. Oct, October 1995) In the early 1980s, Thomas Nelson, cat lover, biochemist, discovered a type of clay that has ability to clump, namely bentonite. It could absorb up to 10 times of its own weight which is able to hold water powerfully and came out resulting in tight clump. Clay bentonite was dug up and processed into granules or either powder form. And since then it has been used a lot for cat lovers or any other who raise a cat even indoor or outdoor (Justine A. Lee, 2016)

#### **2.2 How many types of cat litter are there? and What are the pros and cons of each type?**

Cat litter is usually defined and categorized into two types, from their properties:

**2.2.1 Non-Clumping Clay** – This type of cat litter is not quite favored in Thailand, as it looks like construction sand. When users clean it, they have to discard all of it after a cat excretes and it produces a lot of odor. This type of clay mostly comes from



Fuller Earth, it has great ability in absorbing water but is not really good to absorb odor. But in Non-Clumping Clay they mix with baking soda to increase ability to absorb odor.

**2.2.2 Clumping Clay** – This type of cat litter is very popular in Thailand because of convenience and not too high price.



**Figure 1: Clumping Clay**

**2.2.2.1 Volcanic Rock Cat litter** – It comes from grinding of volcanic rocks, mostly is 100% of bentonite clay level without other chemical. It has high ability to absorb water. Bentonite attribute is acid, but cat urine consists of ammonia which is base. When both of them mix together, it will create a great ability to absorb odor.

**2.2.2.2 Bentonite granules Cat litter** – This type cat litter is lower grade from volcanic rock cat litter. It comes from bentonite powder from industrial grinding to condense. It has ability to clump and it is cheap, but it does not absorb odor. Instead, it mixed with perfume chemical. Some cheaper brand mix between cement powder and

bentonite powder before doing condense, which is very dangerous to our cat's cause of dust and chemicals.

2.2.2.3 Biodegradable – This type of cat litter is the safest for a cat, as it comes from vegetation, but at a higher price than bentonite cat litter.



**Figure 2: Biodegradable**

- Cat litter from Pine Wood – This Cat litter is the cheapest compared to other biodegradables. It comes from scraps of pine wood and condense to granules. The good point is wood smell helping control the cat urine smell.

- Cat litter from corn and wheat – This Cat litter is quite rare to find in the Thai market and has a relatively high price. This type of cat litter is great smell absorber, easy to eliminate (pour into flush toilet). But as it comes from corn and wheat, it may attract mice and other pests.

- Cat litter from walnut shell – This is might be the best in the market because of it is safe to cats, less dusty, has nice clumping and great odor absorbing properties, can be flush in toilet, fast carbonization, but at a very high price.

- Cat litter from Tofu – It is very popular in Korea and Japan because it can be flushed in the toilet. It suited for people who live in a condominium. Many brands are mixed with Food Color to attract to customers, can absorb odor and has good clumping, but at quite high price in Thailand.



- Cat litter from recycled paper – It is famous in Japan for long-time before Cat litter from Tofu because of relatively cheap price, it can be carbonized, but does have much clumping and not good to absorb odor.

**2.2.3 Crystal Cat litter or Cat litter from silica gel** – This cat litter is popular in Malaysia. A prominent point of this type of cat litter is no dust at all and great to absorb odor. If it is used for a while, the color will change from crystal clear to turbid, it means time to change.



**Figure 3: Crystal Cat litter of Cat litter from silica gel**

## **2.3 Is cat litter important?**

Cats are clean pets and their sense of smell is 14 times stronger than human sense, so therefore the significance of keeping a box clean is important (Purina, 2015) (Julie, October 2014) One of the important things for raising a cat indoor is cat toilet set, which consists of the cat litter's box, clumping litter, and cat litter. All of these are very important for raising a cat indoors, to provide an area for the cat to excrete. Cat toilets have many designs to suit to people's house)

## **2.4 How often should we take out a clumping litter or clean a cat toilet box?**

A dirty cat litter box can cause defecation problems for cats, so it is recommended to keep the box clean to avoid any bacteria and odor. Further, it also prevents house from a soiling problem (Purina, 2015) Cat owners should take out a clumping litter at least 2 times a day (morning and evening) and change all cat litter every 1-2 weeks (Member number 2424695 & Member wizard3d, August 2016). It is recommended to clean a cat litter box every month and to change the cat litter box every year, to avoid adverse residue left in the box, which we might not see but could affect the cat (Meaw Meaw Story)



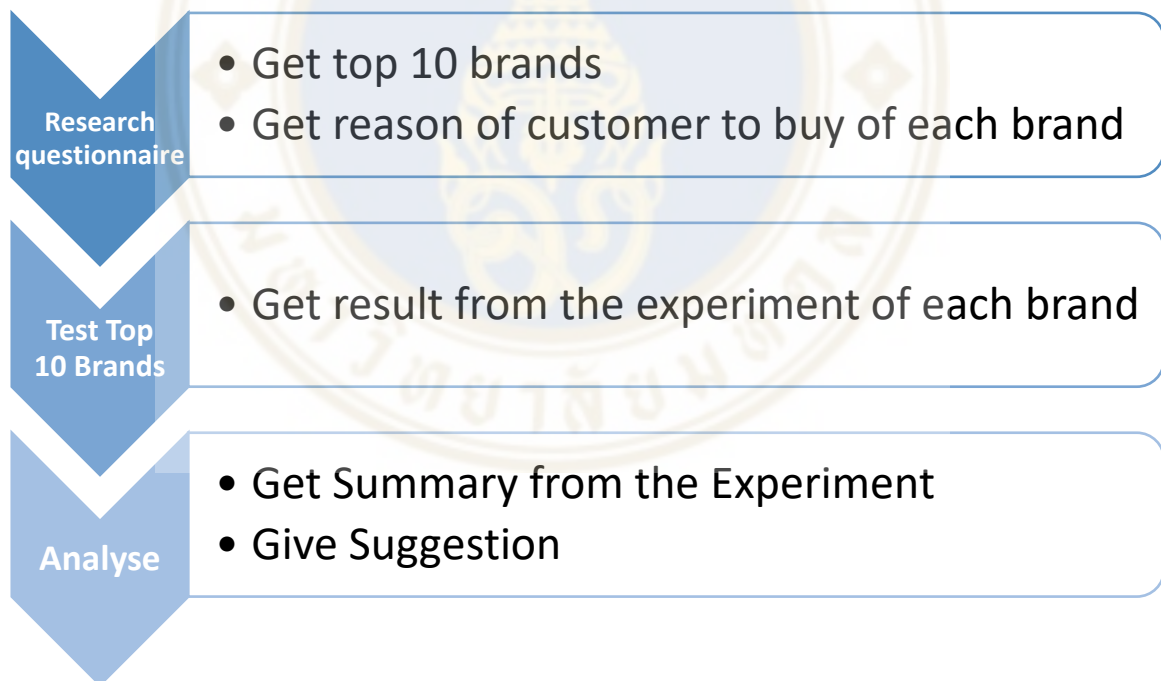


## CHAPTER III

### DATA COLLECTION METHODOLOGY

#### 3.1 Survey and Experimental Framework

We will survey the community of cat lovers in Thailand, including people who raise a cat indoor and use a cat litter product. We measure these respondents' favorite brands in Thailand to find out the top 10 cat litter brands in the market. Then an experiment will be conducted to measure the dust spreading (when pouring cat litter into the tray), water clumping ability, and odor absorbing ability. Finally, the performance of the cat litter products during the experiment will be compared to the product ranking among the respondents.



**Figure 4: Methodology**

### 3.2 Survey questions

The survey is created to collect information from families who raise a cat indoors and use a cat litter product. The aim of the questions is to learn about the favorite cat litter brands in the Thai market, and the reasons cat owners have for selecting each brand of cat litter, from cat lover communities on the internet.

### 3.3. Measurements used in the experiment

An experiment will be then conducted to measure the performance of the Top cat litter products in the Thai market. The properties that will be measured to assess the abilities and performance of each cat litter brand are as follows below:

**3.3.1 Dust from cat litter experiment** – We will use a Particle Counter; it can show the amount of dust when we pour clay into a tray and after leaving it to rest for a while. We use particle counter from MI brand.



**Figure 5: Particle Counter**

The steps of experiment are;

3.3.1.1 Use same device of MI particle counter to measure.

3.3.1.2 Measure first time by putting the particle counter to touch surface of cat litter immediately after pouring cat litter to the tray and waiting until the device shows the particle number.

3.3.1.3 Measure second time by waiting for 2 minutes after pouring cat litter and the dust dropped down to the ground, and put the particle counter to touch the surface of cat litter, waiting until the device shows the number.

3.3.1.4 Measure 3 times per each cat litter brand and average and round up to a single number.

3.3.1.5 Air Quality index (Lower number is better).

AQI	0-25	26-50	51-100	101-200	201 and above
Meaning	Very good	Good	Moderate	Bad	Very Bad

**Figure 6: Air Quality Index**

3.3.1.6 Conclusion for each brand



**Figure 7: Particle Counter (Measured)**

**3.3.2 Water Clumping ability experiment** – We will pour clay into a glass in the same amount and pour water into each clay in the same amount.



**Figure 8: How to test clumping ability**

The method how to measure clumping ability is that, we will scoop out at the pouring zone out and see the shape of clumping. If the product has high ability to clump, the cat litter will be solid (as in figure 7), otherwise it will be friable. The steps of experiment are;



3.3.2.1 Put same amount of cat litter into paper bowl.

3.3.2.2 Pour plain water 60ml into cat litter in paper bowl. (Amount of water came from, generally cat will urine about 28ml/kg in 24hours (Dr. Mike Paul, April 2015) and 2 times per day (Dr. Ernie Ward, March 2017). Cat in sample weight about 5.7kg, then the calculation is  $(28 \times 5.7) / 2 = 79.8$  ml)

3.3.2.3 Waiting for 5 hours and bring the clumping out from a paper bowl

3.3.2.4 Researcher stabs a toothpick into the clumping for measurement, to see, how the brittle of the clumping, more brittle means worse.

3.3.2.5 Higher score is better.

3.3.2.6 Draw conclusions for each brand



**Figure 9: How to measure clumping ability**

**3.3.3 Odor absorbing experiment** – According to the government gazette, they notice that the method to do sensory test is test by human sense of smell. Therefore we will use 2 persons who raise a cat and 1 person who does not raise a cat to do the sensory test (The government gazette, book 128 part 89) (Matichon Online, June 2017) Before the sensory test, all testers must clear their sense of smell by smelling coffee for a half minute, rest 1 minute, and then smell the example (Deoklear, May 2018) (Genevieve Van Wyden). The steps of experiment and conditions are;

3.3.3.1 Use a big size of Cat Excrete Box and in every sample of the experiment, we use the same Cat Excrete box.



**Figure 10: Cat Litter Box in the experiment**

3.3.3.2 Amount Cat litter which use in each experiment is 3.5Litrs.



**Figure 11: Cat litter amount**

3.3.3.3 Leave the box for 48 hours then smell it by 3 persons, included by 2 persons have raised a cat and another person never raised a cat, they gave a score on intense of smell, low is great, then average and round up to a single number.

3.3.3.4 Higher score is better.

3.3.3.5 Draw a conclusion for each brand.

3.3.3.6 The cats eat wet food 1 small can every day, dry food and water as much as they want, buffet style.



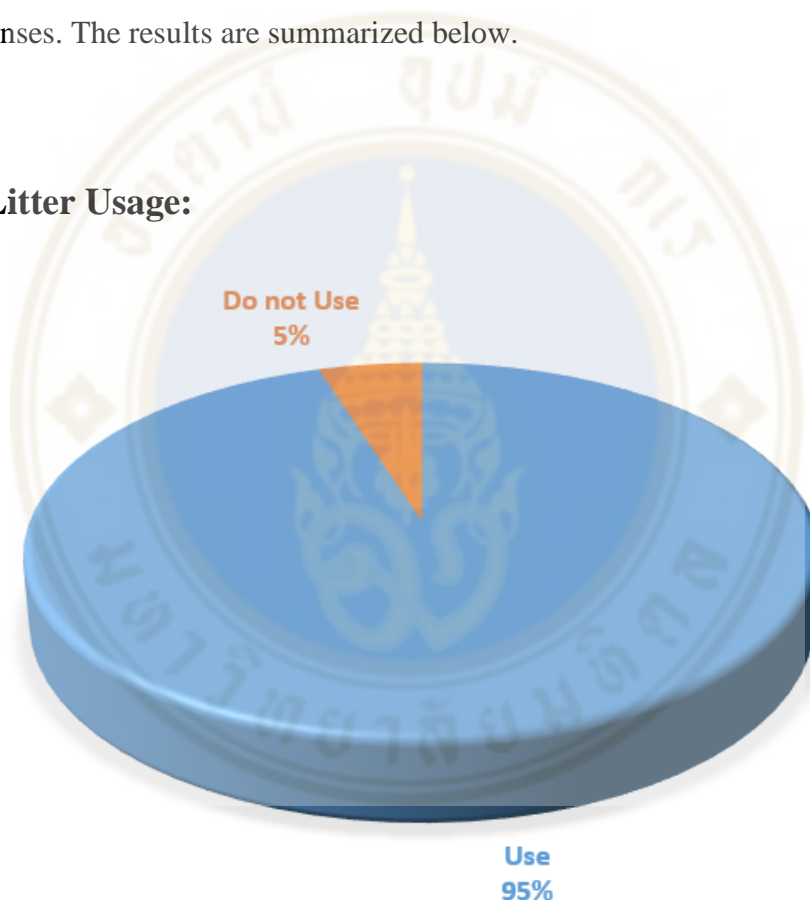
**Figure 12: Cat foods**

## CHAPTER IV

### FINDINGS AND RESULTS

After fielding the consumer survey about cat litter products through cat lover communities by posting at the community via Facebook application, then we received 102 valid responses. The results are summarized below.

#### 4.1 Cat Litter Usage:

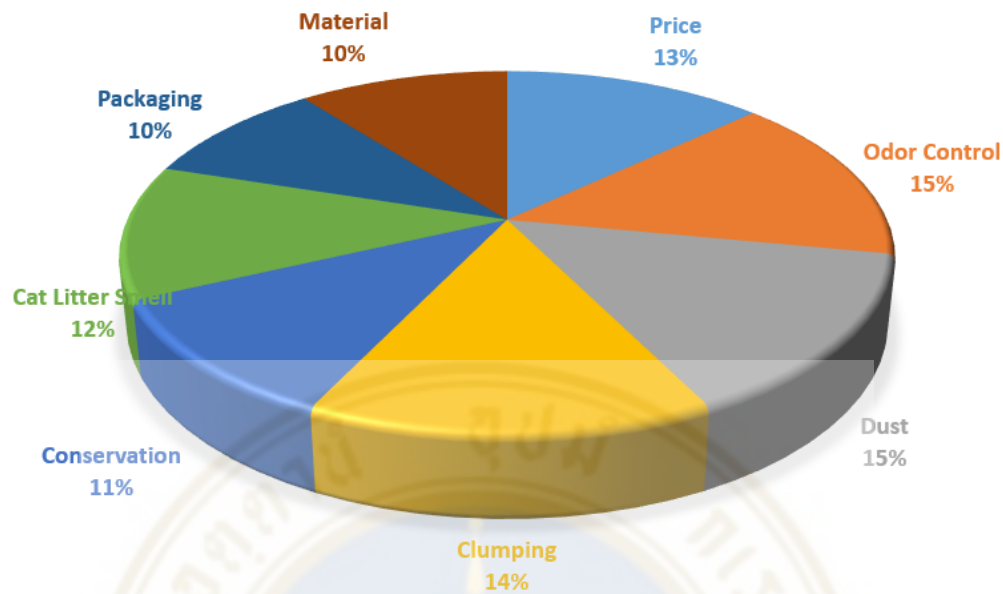


**Figure 13: Pie charts from result of cat litter survey about cat litter usage**

The result above shown from all respondents who raise the cat, 95 percent of them use a cat litter product for their cat. It can be concluded that cat litter is necessary for raising a cat for nearly all Thai cat owners (95%)



## 4.2 Factors what effect to buying decision



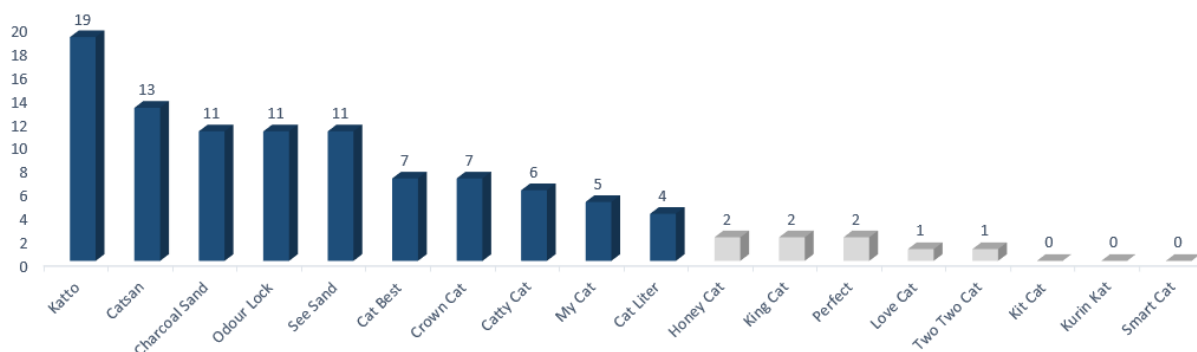
**Figure 14: Pie charts from result of cat litter survey about buying factor**

The result form survey shows each decision factor. Although the percentage of each is not too different, but the most important factors are odor control at 15 percent and cat litter dust control at 15 percent, then clumping 14 percent and others respectively, which is matched to the experiment conducted later on.

From the result, it can be summarized that people who raise a cat are interested in many factors when making a decision to buy cat litter, but the main reasons are odor control, cat litter dust, and clumping ability. After product ability and performance, price and cat litter smell can be the next reasons to consider to buy and use a specific brand.

## 4.3 Top 10 brands

Top 10 brands from the respondent interest to choose when they buy cat litter for their cat are shown in the chart below;



**Figure 15: Bar charts from result of cat litter survey about 10 brands selected**

Top 10 brands from surveys were,

**Rank 1 :** Katto with 19 Votes

**Rank 2 :** Catsan with 13 Votes

**Rank 3-1 :** Charcoal Sand with 11Votes(due to same amount of answer from rang 3 to 5)

**Rank 3-2 :** Odour Lock with 11 Votes (due to same amount of answer from rang 3 to 5)

**Rank 3-3 :** See Sand with 11 Votes (due to same amount of answer from rang 3 to 5)

**Rank 6-1 :** Cat Best with 7 Votes (due to same amount of answer from rang 6 and 7)

**Rank 6-2 :** Crown Cat with 7 Votes (due to same amount of answer from rang 6 and 7)

**Rank 8 :** Catty Cat with 6 Votes

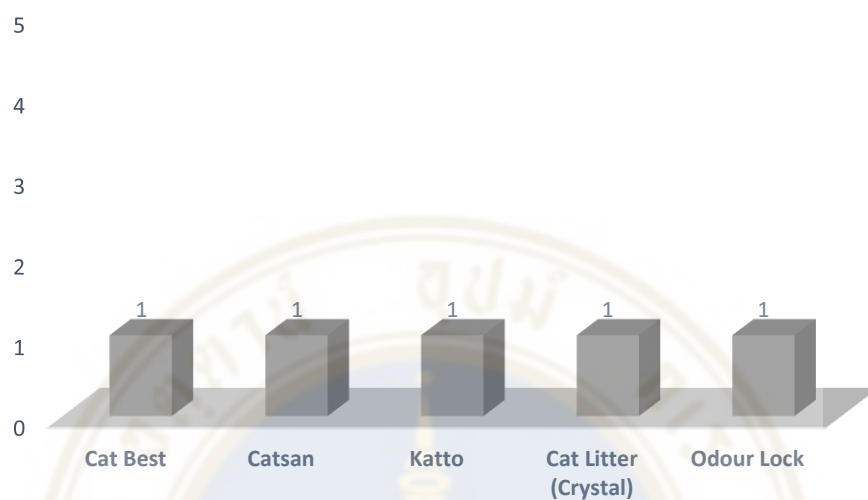
**Rank 9 :** My Cat with 5 Votes

**Rank 10 :** Cat Litter with 4 Votes

We will use these 10 most frequently mentioned brands to do the experiment in term of dust measurement, odor control, and clumping ability in each brand.

## 4.4 Cat litter brand which match to factor in experiment

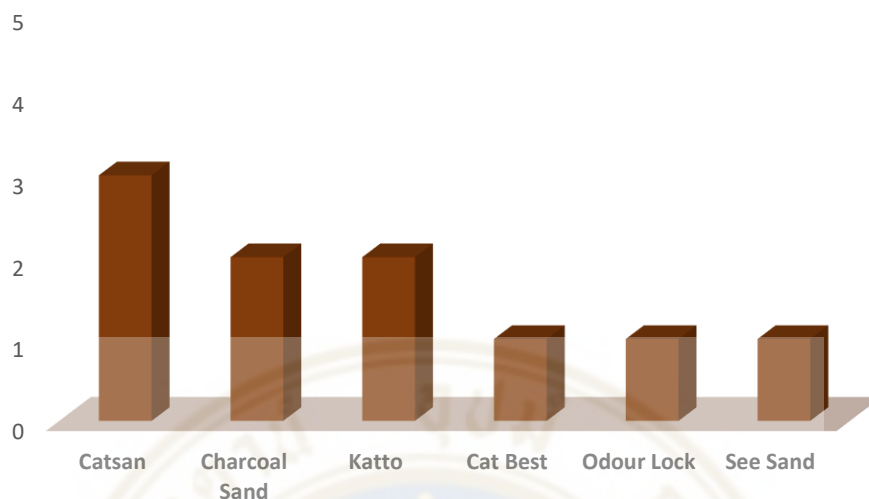
### 4.4.1 Dust in cat litter factor



**Figure 16: Bar charts from result of cat litter survey about people choose to buy because of Dust**

The graph shows the brands chosen by people who say the main reason why they buy a cat litter brand is because of less dust: from the Top 10, the brands are Charcoal Sand, Odour Lock, Cat Best, Catty Cat, Katto, Catsan, Cat Litter (Crystal), My Cat, Crown Cat, and See Sand respectively.

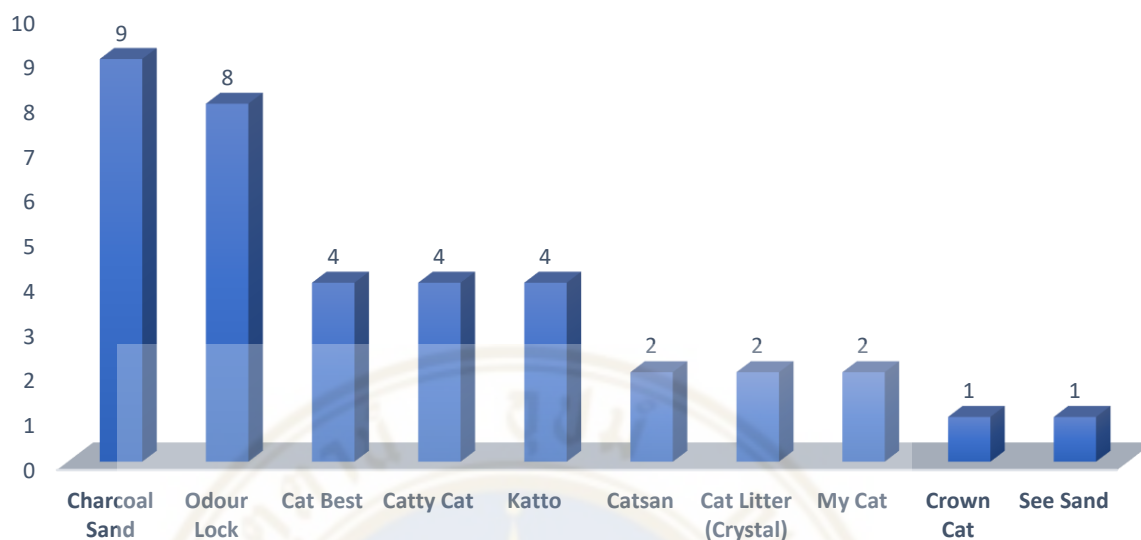
#### 4.4.2. Clumping ability factor



**Figure 17: Bar charts from result of cat litter survey about people choose to buy because of clumping ability**

The graph shows the brands chosen by people who say the main reason why they buy a cat litter brand is because of Clumping ability, sorted by popularity among the top 10 brands: Catsan, Charcoal Sand, Katto, Cat Best, Odour Lock, and See Sand respectively.

#### 4.4.3. Odor Control ability factor



**Figure 18: Bar charts from result of cat litter survey about people choose to buy because of Odor Control**

The graph shows the brands chosen by people who say the main reason why they buy a cat litter brand is because of odor control, sorted by popularity among the top 10 brands: Charcoal Sand, Odour Lock, Cat Best, Catty Cat, Katto, Catsan, Cat Litter (Crystal), My Cat, Crown Cat, and See Sand respectively.

#### 4.5 Result from the Experiment

For the top 10 cat litter products from the survey above, we conducted the experiment to measure the performance and get the result 1 by 1 as shown below.

**Rank 1 : Katto****Figure 19: Katto cat litter**

Katto cat litter is a product that uses general grade bentonite. The texture of the product is small round cat litter. The product is easy to find in market, and the price is relatively low (about 220 baht) compared to other brands.

Base on the experiment results, the dust number is quite high for this product when measured immediately after putting into the tray. However, the number went down after resting for a while. Clumping ability was normal: after putting water into the glass with the product it was absorbed fast, but a bit loosely. When using a toothpick stab into the clump, it was fragile. The odor control is alright; after 2 days, it has some smell when getting close to the cat box.





**Figure 20: Katto material texture and clumping ability**

**Scores from the experiments:**

**Dust measurement:** Immediate 247  $\mu\text{g./m}^3$ , after resting for 2 minutes

22  $\mu\text{g./m}^3$

**Clumping ability:** 6 points

**Odor absorbing:** 6 points

**Rank 2 : Catsan**



**Figure 21: Catsan cat litter**

Catsan cat litter is a product that uses general grade bentonite. The texture of the product is small round cat litter. The product is easy to find in the market, because this product shows up in any supermarket, Tops, Tesco, BigC, and etc. The price is relatively high (about 410 baht) compared to other brands.

Based on the experiment results, the dust number is moderate for this product when measured immediately after putting it into the tray. And the dust number went down after resting for a while. Clumping ability was good: after putting water into the glass with the product it was absorbed fast and agglomerate like a clay. When using a toothpick to stab into the clump, it was difficult to fragile. Odor control is not good; after 2 days, odor spread out a lot from the cat box.



**Figure 22: Catsan Sand material texture and clumping ability**

**Scores from the experiments:**

<b>Dust measurement:</b>	Immediate 53 $\mu\text{g./m}^3$ , After resting for 2 minutes 10 $\mu\text{g./m}^3$
<b>Clumping ability:</b>	8 points
<b>Odor absorbing:</b>	4 points



### Rank 3-1 : Charcoal Sand



**Figure 23: Charcoal Sand cat litter**

Charcoal Sand cat litter is product that mixed with charcoal bits and premium grade bentonite. The texture of the product is tiny cat litter. The product is easy to find in market, and the price is relatively high (about 555 baht) compared to other products.

Based on the experiment results, the dust number is extremely low for this product when measured immediately after putting it into the try. After resting for a while, the number is not much different because it was already small number after putting it in initially. Clumping ability was great: after putting water into the glass with the product it was absorbed very fast, and agglomerate like a clay. When using a toothpick to stab into the clump, it was sticky and very difficult to fragile. The odor control is bravo; after 2 days, we were not getting any smell out of the cat box, and it has light smell after opening the cat box.



**Figure 24: Charcoal Sand material texture and clumping ability**

**Scores from the experiments:**

<b>Dust measurement:</b>	Immediate 10 $\mu\text{g./m}^3$ , after resting for 2 minutes 2 $\mu\text{g./m}^3$
<b>Clumping ability:</b>	9 points
<b>Odor absorbing:</b>	9 points

### Rank 3-2 : Odour Lock



**Figure 25: Odour Lock cat litter**

Odour Lock is imported cat litter product from Canada that uses ultra-premium grade bentonite. The texture of the product is tiny cat litter. The product is easy to find in the market, and the price is the highest (about 586 baht) compared to other products.

Based on the experiment results, the dust number is extremely low for this product when measured immediately after putting it into the tray, and after resting for a while, the dust number was not very different because it was already low. Clumping ability was great: after putting water into the glass with the product it was absorbed very quick, and agglomerate like clay. When using a toothpick to stab into the clump, it was very difficult to fragment. The odor control is excellent; after 2 days, it has not any odor from the cat box, and when opened the box, it has only gentle smell from the box.



**Figure 26: Odour Lock material texture and clumping ability**

**Scores from the experiments:**

<b>Dust measurement:</b>	Immediate 7 $\mu\text{g.}/\text{m}^3$ , after rest for 2 minutes 2 $\mu\text{g.}/\text{m}^3$
<b>Clumping ability:</b>	9 points
<b>Odor absorbing:</b>	8 points



### Rank 3-3 : See Sand



**Figure 27: See Sand cat litter**

See Sand cat litter is a product that uses general grade bentonite but add more fragrance, such as apple smell, coffee smell, lemon smell. The texture of the product is small round cat litter. The product is easy to find in the market, and the price is relatively low (about 199 baht) compared to other brands.

Base on the experiment results, the dust number is high for this product when measured immediately after putting into the tray. Nevertheless, the dust number went down after resting for a while. Clumping ability was good: after putting water into the glass with the product it was absorbed fast and sticky, and agglomerate like clay. When using a toothpick to stab into the clump, it was dry and fragile. The odor control is well; after 2 days, it has a bit excrete smell mixed with lemon smell when getting close to the cat box.



**Figure 28: See Sand material texture and clumping ability**

**Scores from the experiments:**

**Dust measurement:** Immediate 140  $\mu\text{g./m}^3$ , after rest for 2 minutes 13  $\mu\text{g./m}^3$

**Clumping ability:** 8 points

**Odor absorbing:** 7 points

**Rank 6-1 : Cat Best**



**Figure 29: Cat Best cat litter**

Cat's Best cat litter is imported product from Australia that uses natural material, woods. The texture product is soft and light. The product is easy to find in the market, but the price is relatively high (about 472 baht) compared to other brands. This cat litter product can be flush in a toilet after use.

Based on the experiment results, the dust number is extremely high, the number rise to the maximum number of the particle counter. Although, the dust number dropped down to small number after resting for a while. Clumping ability was unattractive: after putting water into the glass with the product it was absorbed fast, but loosely. When using a toothpick to stab into the clump, it was fragile. The odor control is worst if compared to other brands, a smell was spread a lot after 2 days.



**Figure 30: Cat Best material texture and clumping ability**

**Scores from the experiments:**

**Dust measurement:** Immediate 600  $\mu\text{g./m}^3$  (max number of particle counter), after rest for 2 minutes 17  $\mu\text{g./m}^3$

**Clumping ability:** 4 points

**Odor absorbing:** 2 points

### Rank 6-2 : Crown Cat



**Figure 31: Crown Cat cat litter**

Crown Cat cat litter is a product that use common grade bentonite but add more fragrances, such as chocolate smell, apple smell, strawberry smell, and lemon smell. The texture of the product is small round cat litter. The product is easy to find in the market, and the price relatively low (about 184 baht) compared to other brands.

Based on the experiment results, the dust number is quite high for this product when measured immediately after putting it into the tray. But the dust number went down after resting for a while. Clumping ability was good: after putting water into the glass with the product it was absorbed fast, and agglomerate like clay. When using a toothpick to stab into the clump, it was difficult to fragment. The odor control is well; after 2 days, it has only little smell when getting close to the cat box.





**Figure 32: Crown Cat material texture and clumping ability**

**Scores from the experiments:**

**Dust measurement:** Immediate 181  $\mu\text{g./m}^3$ , after rest for 2 minutes 14  $\mu\text{g./m}^3$

**Clumping ability:** 8 points

**Odor absorbing:** 7 points

**Rank 8 : Catty Cat**



**Figure 33: Catty Cat cat litter**

Catty Cat cat litter is a product that uses material from tofu and add on green tea scent. The texture of the product is soft and light weight. The product can be finding from the internet and the price is relatively middle (about 332 baht) compared to other brands.

Based on the experiment results, the dust number is very low for this product when measured immediately after putting it into the tray, and after resting, the dust number is still very low. Clumping ability was good: after putting water into the glass with the product it was absorbed fast, but a bit loosely. When using a toothpick to stab into the clump, it was fragile. The odor control is great; after 2 days, it has not any smell when getting close to the cat box, and when open the box, it has only green tea smell cover all excrete smell.



**Figure 34: Catty Cat material texture and clumping ability**

**Scores from the experiments:**

<b>Dust measurement:</b>	Immediate 19 $\mu\text{g./m}^3$ , after rest for 2 minutes 13 $\mu\text{g./m}^3$
<b>Clumping ability:</b>	7 points
<b>Odor absorbing:</b>	10 points

**Rank 9 : My Cat****Figure 35: My Cat cat litter**

My Cat cat litter is a product that uses general grade bentonite, it has charcoal scent, but it is not mixed with charcoal material. The texture of the product is small round cat litter. The product is easy to find in the market, and the price is relatively low (about 190 baht) compared to other brands.

Based on the experiment results, the dust number is high for this product when measured immediately after putting it into the tray. However, the dust number went down after resting for a while. Clumping ability was very good: after putting water into the glass with the product it was absorbed quick. When using a toothpick to stab into the clump, it was difficult to fragile. The odor control is normal; after 2 days, it has smell when getting close to the cat box.



**Figure 36: My Cat material texture and clumping ability**

**Scores from the experiments:**

<b>Dust measurement:</b>	Immediate 158 $\mu\text{g./m}^3$ , after rest for 2 minutes 11 $\mu\text{g./m}^3$
<b>Clumping ability:</b>	8 points
<b>Odor absorbing:</b>	6 points

**Rank 10 : Cat Litter (Crystal)**

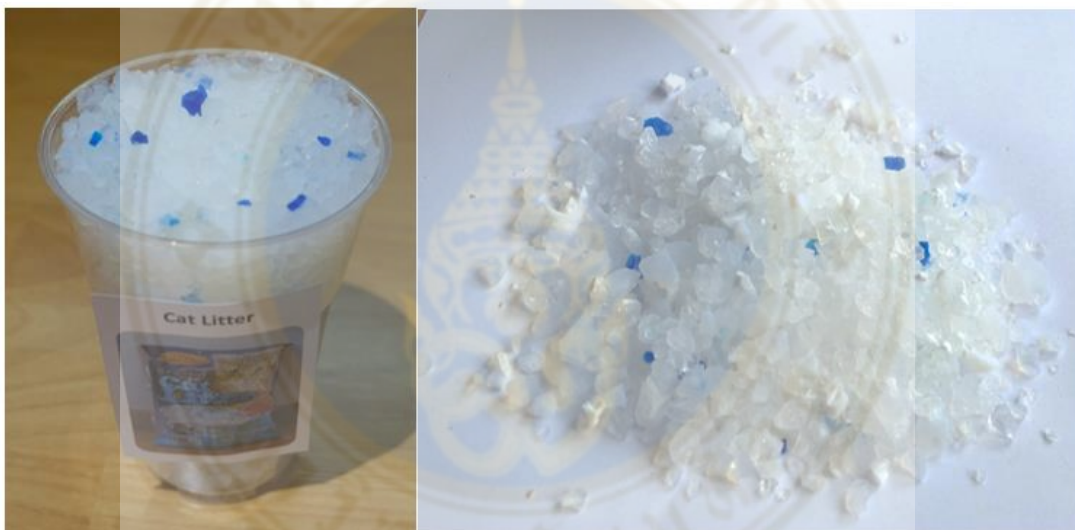


**Figure 37: Cat Litter (Crystal) cat litter**



Crystal cat litter from Catty Cat product texture is pebble clear crystal cat litter. The product is easy finding from the internet, and the price is relatively mid-range (about 322 baht) compared to other brands.

Based on the experiment results, the dust number is extremely high to the max number of particular counter when measured immediately after putting it into the tray. And the dust number is still stay at the max number after resting for a while. Clumping ability was common: after putting water into the glass with the product it was absorbed fast into the crystal, and the crystal turns from clear crystal to turbid (Crystal Cat litter can be reuse by resting a turbid crystal among sun light, moistness in crystal will volatile, crystal returns to crystal clear). But it has not agglomerated. The odor control is acceptable; after 2 days, it has some smell when getting close to the cat box



**Figure 38: Crystal Cat Litter material texture and absorbed ability**

**Scores from the experiments:**

**Dust measurement:** Immediate 600  $\mu\text{g./m}^3$ , after rest for 2 minutes 600  $\mu\text{g./m}^3$  (Both of measured got the same amount which is max number of particle counter)

**Clumping ability:** 6 points

**Odor absorbing:** 6 points



### Summary Raw Result table

**Table 1 : Summary Raw Result Table**

Rank	Brand	Dust Result (After Poured)	Dust Result (After Rested)	Clumping	Odor Control	Package Price (10- 12Liter)*	Average Price per Liter
1	Katto	247	22	6	6	220	22
2	Catsan	53	10	8	4	410	41
3	Charcoal Sand	10	2	9	9	555	46
4	Odour Lock	7	2	9	8	586	49
5	See Sand	140	13	8	7	199	20
6	Cat Best	600	17	4	2	472	47
7	Crown Cat	181	14	8	7	184	18
8	Catty Cat	19	13	7	10	332	28
9	My Cat	158	11	8	6	190	19
10	Cat Litter (Crystal)	600	600	6	6	322	32

*\* Average price from pet shop (at least 3 shops per brand)*

### Summary score comparative table

**Table 2 : Summary score comparative table**

Rank	Brand	Dust Score* (After Poured)	Dust Score* (After Rested)	Clumping	Odor Control	Pricing Score**	Total Score
1	Katto	5	10	6	6	6	33
2	Catsan	9	10	8	4	3	34
3	Charcoal Sand	10	10	9	9	2	40
4	Odour Lock	10	10	9	8	2	39
5	See Sand	8	10	8	7	7	40
6	Cat Best	0	10	4	2	2	18
7	Crown Cat	7	10	8	7	7	39
8	Catty Cat	10	10	7	10	5	42
9	My Cat	8	10	8	6	7	39
10	Cat Litter (Crystal)	0	0	6	6	5	17

\* Dust score came from formula (Find an average dust result number for a mid-point and separated range of data from lowest result number to highest result number to 10 ranges that equal to 1-10 points, then compare dust result number of each product to each range and get a score).

\*\* Pricing score came from formula (Find an average of price per liter for a mid-point and separated range of data from lowest price to highest price to 10 ranges that equal to 1-10 points, then compare average price per liter of each product to each range and get a score).

### **Re-arrange ranking position of cat litter product table**

After getting the performance score of all cat litter products, and adding points for product price (the lower the higher the sub-score), the ranking is changed as follows, from best to worst: Catty Cat, Charcoal Sand, See Sand, Odour Lock, Crown Cat, My Cat, Catsan, Katto, Cat Best, and Cat Litter (Crystal), respectively.

**Table 3 : Re-arrange ranking table**

Rank	Brand	Total Score
1	Catty Cat	42
2	Charcoal Sand	40
3	See Sand	40
4	Odour Lock	39
5	Crown Cat	39
6	My Cat	39
7	Catsan	34
8	Katto	33
9	Cat Best	18
10	Cat Litter (Crystal)	17

## **CHAPTER V**

### **DISCUSSION AND CONCLUSION**

According to the research result, it is shown that cat litter is an important product for Thai families who raise a cat indoors. They pay attention to every factor when buying cat litter products, because of all factor's percentages are not much different. The Top 3 most important factors for consumers buying cat litter products are Odor control, Dust spreading from the cat litter product, and Clumping ability, respectively. Although price is the 4th ranked factor, its percentage is close to the Top 3 factors as well, meaning pricing is also important. Hence, when buyers make a decision, they also think about value for money. But some family disregard about pricing, they are willing pay more for the best cat litter product for their cat, and also for their own health (Odor) and comfort (Clumping).

According to the results of the experiments, we cannot tell that which one is the best cat litter brand in the market. But we can compare in each factor which suit for a cat or in each family. For instance, Family A is interested in odor control but do not interested much about clumping ability, because this family lives in small studio condominium, where odor can spread everywhere in the room. Then family A is suited to buy Catty Cat brand because this cat litter product has the highest score in odor control. Alternatively, Family B may be interested in all three factors, and they want the best cat litter product for their cat, as they have a big house and ignore pricing. This family is suited to buy Charcoal Sand or Odour Lock, because of these cat litter brands are doing great on all factors. Finally, family C prefers to save money. This family might select Katto, My Cat, or Cat Litter (Crystal) because of the price, while Crystal Cat litter can be reused as well.

The experiment results showed that cat litter products which have less dust in the air are Charcoal Sand and Odour Lock, both immediately after pouring and after resting. It means that when a cat stays in a cat box, it will get less dust, if compared to other cat litter products. In terms of clumping factor, the best cat litter products are still Charcoal Sand and Odour Lock because when they agglomerate after use, they will not be fragile

when you scoop them out. Furthermore, other cat litter products which get 8 and 7 scores perform good as well, for example; Catsan, See Sand, Crown Cat, My Cat, and Catty Cat are still good enough to scoop the product out without being fragile as well.

In term of odor control ability factor, the experiment showed that the best among the Top 10 cat litter products is Catty cat, even past 48 hours which using by 2 cats, we still got nice green tea scent instead of excrete odor. And the product is also light weight, as the material comes from tofu. Beside 10 scores, 9 scores from Charcoal Sand still great and 8 scores from Odour Lock is good enough to use, because of among the experiment, we left all excrete in the box for 48 hours and they were just spread only small odor when the box was opened. Actually, in real life, we usually scoop excrete out every day, thus 8-10 scores should be enough for most families who raise a cat. When consumers choose a cat litter product, they are not concerned only about one factor but all main factors are considered, depending on the situation of each family.

If we see the cat litter products divided by price range compared to the performance score, we can show that among cat litter products in the high price range, the highest scoring product is Charcoal Sand, closely followed by Odour Lock. Catty cat is the best in the middle price range. And in low price range See Sand gets the highest score, while being closely followed by Crown Cat and My Cat. All information is show in the table below.

**Table 4 : Price Range table**

Price Range	Brand	Average Price per Liter	Total Score
<b>High Price</b> (Above 40 baht per liter)	Charcoal Sand	46	40
	Odour Lock	49	39
	Cat Best	47	18
	Catsan	41	34
<b>Middle Price</b> (25-40 baht per liter)	Catty Cat	28	42
	Cat Litter (Crystal)	32	17
<b>Low Price</b> (Lower 25 baht per liter)	See Sand	20	40
	Crown Cat	18	39
	My Cat	19	39
	Katto	22	33



From all information above, in terms of practical benefits of this research, it can help everyone who raise a cat in Thailand to select a cat litter for their cat. For others who need to do the business, they can use this information to focus in their product range or pricing strategy to compete in the market



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## APPENDIX A: QUESTIONNAIRES

### The Key Factors that Influence People Behavior to Buy Cat Litter Products

The research question is to explore and find the factors that influence Thai cat owners to select and buy a cat litter product which is a part of subject “Thematic paper: Consulting Practice” of Master degree program of Collage of Management Mahidol University.

Please complete the following question from your raising cat experience. Your information will be kept confidential.

**Please ✓ in front of the answer(s) that match on your experiences.**

#### Survey Question List

1. How many cats do you have ?

☐ 1

☐ 3

☐ 2

☐ More than 3

2. How long have you raised your cat ?

☐ Less than 1 year

☐ 3-5 years

☐ 1-2 years

☐ More than 5 years

3. How do you raise a cat ?

☐ Indoor

☐ Mix

☐ Outdoor

4. What kind of food that you feed your cat ?

☐ Dry Food

☐ Mix Dry and Wet Food

☐ Wet Food



☐ Human Food (anything you eat)

☐ Mix All

5. Where is your cat excrete ?

☐ In Flush Toilet

☐ On the floor

☐ Cat Excrete Box

☐ Others

6. Do you use cat litter ?

☐ Yes

☐ No

7. How often do you clean cat waste in a box (in case of using Cat Excrete Box) ?

☐ Less than 1 time per week

☐ 4-5 times per week

☐ Once a week

☐ Every day

☐ 2-3 times per week

8. What type of material do you prefer (Can Select more than 1) ?

☐ Non-Clumping Clay

☐ Cat litter from walnut shell

☐ Cat litter from Volcanic Rock

☐ Cat litter from Tofu

☐ Cat litter from Bentonite granules

☐ Cat litter from recycled paper

☐ Cat litter from Pine Wood

☐ Crystal Cat litter

☐ Cat litter from corn and wheat

9. Rating of your interest and/or concern when you select cat litter (Rating 1-5)

Question	1 No Concern	2 Less Concern	3 Moderate Concern	4 Very Concern	5 Extremely Concern
How many score of your concern about pricing ?					
How many score of your concern about Odor ?					
How many score of your concern about Dust ?					
How many score of your concern about Clumping ?					
How many score of your concern about Conservation ?					
How many score of your concern about Cat litter Smell ?					

How many score of your concern about Packaging ?					
How many score of your concern about Material ?					

10. Which is cat litter brand that you usually use (Can Select more than 1) ?

☐ CATSAN



☐ Odour Lock



☐ Kurin Kat



☐ Two Two Cat



☐ Kit Cat



☐ Perfect



[ ] Cat's Best



[ ] Smart Cat



[ ] KATTO



[ ] King Cat



[ ] Cattycat



[ ] Cat Litter (Crystal)



[ ] Crown Cat



[ ] Honey Cat



☐ Love Cat



☐ See Sand



☐ My Cat



☐ Char Coal Sand



11. From answer you select in No.10, what is the most you like to use ?

☐ CATSAN



☐ Kit Cat



☐ Kurin Kat



☐ Odour Lock





[ ] Two Two Cat



[ ] Cattycat



[ ] Perfect



[ ] Crown Cat



[ ] Cat's Best



[ ] Smart Cat



[ ] KATTO



[ ] King Cat





☐ Cat Litter



☐ My Cat



☐ Honey Cat



☐ See Sand



☐ Love Cat



☐ Char Coal Sand



12. From answer you select in No.11, what is the best reason to make you select this brand ?

☐ Cheap Price

☐ Less Dust

☐ Clumping Ability

☐ Believe in Advertising

☐ Less Odor

☐ Suggestion from your friend

☐ A Cat like this brand

☐ Easy to find

## 13. Please Rating your selected

Question	1 No Concern	2 Less Concern	3 Moderate Concern	4 Very Concern	5 Extremely Concern
How many score of your concern about Pricing from cat litter in No.11 ?					
How many score of your concern about Odor from cat litter in No.11 ?					
How many score of your concern about Dust from cat litter in No.11 ?					
How many score of your concern about Clumping from cat litter in No.11 ?					
How many score of your concern about Conservation from cat litter in No.11 ?					
How many score of your concern about Cat litter Smell from cat litter in No.11 ?					
How many score of your concern about Packaging from cat litter in No.11 ?					
How many score of your concern about Material from cat litter in No.11 ?					