

HomeKit Pet Health System

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Introduction

According to data from the market research and consulting company Mintel 1, from 2011 to 2016, the compound annual growth rate of China's pet related total market is expected to reach 28.1%, and sales in 2016 are expected to exceed 53.5 billion Yuan. Most of the consumption and monthly expenses of raising cats and dogs to buy pet food, ranging from 100 to 199 Yuan. The average monthly cost of a dog owner is 232.2 Yuan, and cat owner is 183.7 Yuan.

Consistent with food trends of their owner counterparts, "natural ingredients" and "minimal processing" are the new gold standard of healthy pet food. To address Chinese consumers' food safety concerns, the share of products claiming "no additives or preservatives" is increasing.

On April 24th, 2018, the Chinese Industry Information Network mentioned the country's pet industry has entered a period of vigorous development. In 2017 pet and pet food market has reached 134 billion yuan. It is expected to maintain an average annual growth rate of 30.9% during the period ranging from 2010 to 2020 and is estimated that the market will reach 188.5 billion Yuan by the end of that range. This is due to the increase in per capita GDP, the increase in the proportion of pets raised, and the increased interest in maintaining pet health.

The culture of raising pets has taken shape, and with the rapid increase in income, the pet market will continue to expand.

Because people are paying closer attention to their pets, we have decided to design this project. Its main purpose is to reduce the complexity of maintaining a healthy pet diet and educate owners to improve the health of domestic pets.

The system would contain the following components:

1. Food Dispenser – A HomeKit connected automatic pet food dispenser which performs the following functions:
 - a. Dispenses dry pellet food and reveals the bowl when a pet comes into proximity of the device. Distance from device is determined by a Bluetooth collar worn on the pet. Users can set mealtimes, meal size, and other important settings all through the HomeKit app.
 - b. Automatically and safely retracts the bowl, preventing other pets from stealing food and prevents pests such as mice from being attracted to the food. This also helps keep uneaten meals fresh.
 - c. The device contains a forward-facing camera, speaker, microphone, and HD Display Panel, allowing pet owners to communicate with their pets while away from home.
 - d. Users have the option to scan name brand food before adding it to the hopper, this will provide useful data as to what kind of food is being eaten and how many calories are being consumed per meal.
 - i. Different food types have different calories per KG. The user simply selects in the app how many calories they want per meal. e.g. Fish contains 5 calories per gram while chicken contains 10 calories per gram. The user could set 50 calories per meal and if fish is in the hopper, 10 grams will be dispensed. If chicken, 5 grams will be dispensed.

1. iPhone App and HomeKit Accessory – An iPhone App and HomeKit accessory which gives the user access to the following functions:
 - a. iPhone App
 - i. Allows users to create an “Owner” profile with “pet” sub profiles. Pet profiles can be assigned to one or more “Food Dispensers” and all settings are stored on the cloud. Owner profiles are used to order food as well as view and create pet sub profiles.
 - ii. In pet sub profiles, an owner can set meal plans, pair Bluetooth collars, view important eating habit data on graphs.
 - iii. Users will have free access to training tips for their pets as well as a standard meal plan based on size and breed.
 - iv. Users can subscribe to a “pro” plan which allows monthly consultation from certified veterinarians. Consultations may also be purchased one by one at a premium.
 - v. Users may share their graphed data as well as pictures and video recordings made by the camera.
 - vi. Food may be set to order from the “NekoBot” store automatically if a meal plan is purchased and the dispenser’s hopper food level becomes less than 25%.
 - vii. App will warn owner if eating habits of pet change to promote health and catch possible illness early.
 - b. HomeKit Accessory
 - i. View the onboard camera and video call, allowing the pet to see the owner at eye level, reducing separation stress.
 - ii. Manual override toggles, allowing for control over the basic NekoBot features such as opening/closing the tray and adding/removing meals.
 - iii. View quick optional data such as:
 1. Last time a meal was eaten
 2. Current pet distance from NekoBot (e.g. 20 meters)
 3. Number of meals eaten that day
 - iv. Optional push notifications:
 1. Finished meals for the day
 2. Pet outside of bluetooth range
 3. Loud sound detected by microphone

2. Branded Pet Food – A brand of high-quality pet food will be created to instill confidence in dry pet food among consumers.
 - a. A pet food factory will be created or bought and closely monitored to ensure product quality.
 - b. Based on collected data, ingredient ratio will improve upon over time
 - c. Pet food will undergo transparent and public quality tests to further instill confidence among consumers.
 - d. Food bags will contain RFID chips that can be scanned on the food dispenser which will contain dietary information such as calories and ingredients. However, it is important to note that this is completely optional feature as users may purchase their own brand food and input dietary information manually using the app.
3. Addons – Peripheral devices that can be connected to the main food dispenser as an ‘addon’
 - a. Electronic weight scale
 - b. Water bowl
 - i. Water consumption recording (accounts for evaporation)
 - ii. Ultraviolet and microfilter cleaning
 - c. Treat “cannon”
 - i. What’s more fun than launching a treat?
4. Opt-In Collected Data:
 - a. consumption amount / frequency
 - b. food type popularity
 - c. frequency of possible health issues
 - d. pet weight
 - e. water consumption frequency / amount