Scholar Publishing Group
International Journal of Art Innovation and Development
https://doi.org/10.38007/IJAID.2022.030104
ISSN 2789-7192 Vol. 3, Issue 1: 45-55

Design, Production and Preliminary Commercialization of Pet Art Specimens

Rich Vuduc and Dancheng Hong

University of Munster, Germany

Keywords: Art Specimens, Market Research, Industrialization Model, Sales Outlets

Abstract: This paper aims to study the design, production and preliminary commercialization of pet art specimens, to change the traditional concept of animal specimens in the past, and to emphasize the design and production of novel artistic pet specimens to enhance their artistic appreciation and scientific research. Practicality, reflecting the emotion and harmony between people and animals. In this paper, euthanasia pet dogs, small experimental rats, etc., are peeled, treated with preservatives as little as possible, and then processed into a variety of fixed and cute pet dog postures. Then, a questionnaire was conducted around the neighborhood and near the pet store, and then sold for one week. Record the experimental data at each stage and then analyze the experimental data. The experimental results show that the design, production and preliminary commercialization of pet art specimens are real and feasible, and the market potential is huge, which is a sustainable development path. The experimental results show that by using relevant literature and professional theoretical knowledge and experimental skills, we try to abandon some of the previous specimen processing methods, eliminate the use of highly toxic preservatives, and use less or no preservatives or insecticides that are seriously harmful to the human body. Make a "green" specimen. Can enhance people's recognition of pet art specimens. While conducting pet art specimen production practice, it also carried out market research and marketing introduction, and initially explored the commercial line operation mode of the first-line pet shop in the city to achieve a win-win situation with the cooperative pet store.

1. Introduction

The life and death of animals is a natural and objective phenomenon. The use of dead animals is a very realistic and meaningful work [1]. Its significance is not only that beautiful fur can be used as decorative handicrafts, but also as a material for cold insulation. The skin can be tanned and the bones can be engraved. The important significance is that it can help us carry out scientific research, is an important basic material for studying the relationship between animals and humans, and is also

a precious material for scientific popularization. The pet specimen production technology is the latest practical technology, and it is a new trend of entrepreneurship in the 21st century. Once it is learned, it is a tight talent. "Pet specimens" refer to pets made into specimens after disinfection, antisepsis, etc. [2]. A cat, dog and dog with a step value of only a few hundred yuan is only because of the owner's favor, and after spending a few thousand yuan to make a specimen, it continues to be accompanied by the owner [3]. Since this technology is introduced from abroad, it is generally necessary for multinational training institutions to have this technical training. In addition, it is an emerging technology, so the training fee is very high, generally 50,000 yuan or 60,000 yuan. The preparation of pet specimens is subject to drug soaking, peeling of the flesh, filling and drying, etc., and the time is usually about half a month [4]. Specimens can be kept for 20 years without deterioration. Because the production of pet specimens is different from that of general animal specimens, the production between the two is different. Pet specimens are far more delicate than animal specimens, because animal specimens only need to be shaped, and pet specimens need not only shape but also need to look like To get the approval of the pet owner. With the development of social life, the use of dead animals to produce specimens not only has broader social significance, but also spawn new business opportunities.

Based on the relevant literature and theoretical knowledge and experimental skills of the subject, the project uses a relatively mature method of making animal specimens to carry out a series of experimental operations, trying to master the techniques of animal specimen production [5]. Pet specimens are subject to processing fees ranging from 500 to 2,000 depending on their size and luxury. For larger pets, 30 (X)-60 yuan is required. Take Beijing as an example. There are more than 5 million pets and tens of thousands of pets die each year. 8096 has established deep feelings with their owners. Some even say they have become part of their lives, so people are very willing to spend money. Those pets made specimens, which are more commemorative than burying or discarding. It is another continuation of pet life, so it is very popular [6]. For example, if you process 10 pet specimens per day, the annual profit can reach more than one million yuan, and the benefits are extremely impressive. The artistic design of pet specimens is the first step of this project [7]. By reviewing the relevant materials of animal anatomy and animal art modeling, we can understand the skeletal characteristics and morphological characteristics of animals, so that the animal specimens produced are more vivid and more artistic, and break through the traditional concept of animal specimens in the past, so that the specimens are not It is only a lifeless research product, but a "living" artwork [8]. During the implementation of the project, firstly, various styles of artistic styles were designed, such as the image of a cartoon mouse holding a pot, a shovel, a chef's hat, a guitar, a band rat with a saxophone, and a "tidal" scarf. And the image of the idol dog of the "cool" glasses, dressed as "mother dog baby image, etc.. Then, the experimental operator made a specimen of the animal according to the specimen design draft.

Sun and other scholars believe that the traditional method of making animal specimens generally has three kinds of methods: stripping, drying and dipping. There are some obvious drawbacks. For example, stripping specimens such as snake specimens cannot maintain the color of snakes; dried specimens Such as insect larval specimens, easy to mold and insects during storage; infusion specimens such as fish specimens, although long-term preservation, but easy to change color, coupled with the volatilization of preservation solution such as formaldehyde, the preservation solution reduces the effect of preservation, and will Serious pollution to the environment. It is precisely because of the above-mentioned preservation methods that they are looking for another more effective method of specimen preservation and promote the birth of bioplasticization technology [9]. Zhang and other scholars have found that the quality of macromolecular DNA extracted from long-preserved animal specimens of ethanol is improved, and animal tissues are pretreated by five different methods, followed by SDS/proteinase K cleavage, phenol-chloroform

extraction and ethanol precipitation. Total DNA, electrophoresis and PCR products were identified by 0.8% agarose gel. After comparison, pretreatment with 0.9% NaCl method, PBS method and mixed solution method to eliminate the effect of ethanol on Taq enzyme and protein and nucleic acid. The cross-linking problem is three more ideal methods for extracting animal genomic DNA [10].

In this paper, euthanasia pet dogs, small experimental rats, etc., are peeled, treated with preservatives as little as possible, and then processed into a variety of fixed and cute pet dog postures. Then, a questionnaire was conducted around the neighborhood and near the pet store, and then sold for one week. Record the experimental data at each stage and then analyze the experimental data. The experimental results show that the design, production and preliminary commercialization of pet art specimens are real and feasible, and the market potential is huge, which is a sustainable development path. The experimental results show that by using relevant literature and professional theoretical knowledge and experimental skills, we try to abandon some of the previous specimen processing methods, eliminate the use of highly toxic preservatives, and use less or no preservatives or insecticides that are seriously harmful to the human body. Make a "green" specimen. Can enhance people's recognition of pet art specimens. While conducting pet art specimen production practice, it also carried out market research and marketing introduction, and initially explored the commercial line operation mode of the first-line pet shop in the city to achieve a win-win situation with the cooperative pet store. It is feasible.

2. Proposed Method

2.1. Specimen

(1) Specimens are animals, plants, minerals and other real objects. After various treatments, they can be preserved for a long time and kept as original as possible, so as to provide for exhibition, demonstration, education, identification, research and other research.

(2) The specimen processing method can take the whole individual (or even multiple individuals, such as bacteria, algae, etc., or individuals such as fungi, and gather one), or part of the sample, after physical drying, Vacuum, chemical anti-corrosion treatment and other treatments can be made.

2.2. Classification of Specimens

(1) Specimens can be roughly divided into: animal specimens, bird specimens, fish specimens, insects, plant specimens, bone specimens, shrimp and crab specimens, fossil specimens, and the like.

1) Plant specimens are classified according to the purpose of use. Whole specimen: usually used to identify plants, identify scientific names, and identify Chinese herbal medicines. This type of specimen is also used for vegetation surveys in an area. For example, investigating plant resources in a school or hill. The vegetative organs such as roots, stems and leaves of higher plants are one of the basis for identifying plants, but they often differ depending on the growing environment, while flowers and fruits have a relatively stable heritability, which best reflects the inherent characteristics of plants. An important basis for identifying and identifying plants. Specimens of roots, stems, leaves, flowers, and fruits must be collected as much as possible when collecting specimens. Herbs should also dig up the underground part. From the root system, it can be identified whether it is annual or perennial. In addition to the rhizome, the underground part is often still metamorphosed and metamorphose stems, such as alfalfa, lily, Jerusalem artichoke, cabbage, Huang Jing, Fritillaria, and Qiye. Woody plants should collect representative shoots, preferably with a small bark. The shape and arrangement of sporangia, rhizomes and their scales and hair quilts are important

classification features of ferns, and attention should be paid when collecting them. The whole specimen is often made into a wax leaf specimen and a primary color impregnated specimen.

2) Anatomical specimens: The purpose of the production is to observe and study the internal structure of an organ of a plant. For example, the bulbs of the onions are dissected to observe the structures of the base, the sprouts, the scales, and the fibrous roots. The cucumber was cross-sectioned to observe the lateral membrane placenta and seed placement position of the melon; the peach blossom was longitudinally sectioned to observe the various parts of the flower and its morphology. Collecting such specimens requires only selecting a healthy representative organ, and does not have to collect the entire shoot. Anatomical specimens are usually made into preservative impregnated specimens.

3) Phylogenetic specimens: The purpose of the production is to observe the life history of the plant, that is, the growth of a plant from seed germination to growth and development, flowering, and various stages of the results, which are commonly used in biology teaching, introduction, cultivation and scientific research [11,12]. Such plant specimens must be harvested at different stages of growth and development of the plant. For example, specimens for the germination process of bean and corn seeds should be collected from the embryos, the main roots and the young shoots, and the leaves that grow out of the true leaves. Such specimens can be made into waxy specimens or as impregnated specimens.

4) Comparative specimens: Comparative specimens are mainly to compare the similarities and differences of an organ of different plants. For example, comparing the seed morphology of dicotyledonous plants and monocotyledonous plants, it is necessary to collect mature fruits such as rapeseed, soybean, cucumber, and tomato, remove the peel, dry the seeds, and collect the fruits of wheat, rice, and corn for comparison. Comparing various forms of roots, you can collect cotton from straight roots, rice and wheat in roots, carrots in bulbs, carrots in cone roots, radishes in cylindrical roots, certain potatoes in roots, adventitious roots in corn and sugar cane, and dodders. Parasitic roots of mulberry parasites, etc. Comparing various forms of stems can collect erect stems of peaches, eucalyptus, stalks of morning glory, honeysuckle, stalked strawberries, climbing stalks of grapes, gourds, climbing wall tigers, thorns of hawthorn, saponins, fleshy stems Cactus, sassafras, bulbs of stalks, cabbage, bulbs of onions, garlic, etc. Compare and species of corolla can collect peach blossoms from the petal, cruciferous rapeseed, amaranth, butterfly-shaped corolla, soybean, red sandalwood, broad bean, tubular flower safflower, lingual flower Jerusalem artichoke, and monocotyledonous wheat flower, etc. . Comparison of various inflorescences can collect the races of the cabbage, the front of the spikes, the umbels of the umbels, the sunflowers of the flower heads, and the like. Compare the fruits of various shapes to collect the plum, apricot, berry persimmon, grape, pear fruit apple, ya pear, pod pea, hedgehog, radish of pod, daqing, achene sunflower, caryopsis rice , wheat, scorpion, maple, etc. The comparative specimens can be made into specimens of wax leaves, and can also be made into air-dried specimens, and the fruit is better impregnated with primary colors.

2.3. Production Process

(1) Overview

Insects and appreciators generally have deep feelings for the insects they have carefully raised, and they are reluctant to throw them away after it dies. The only way to see these insects in the future is to make them into specimens. There are two main methods for making specimens: needle insertion and liquid immersion. For insects, needle insertion is generally used to make specimens.

(2) Needle insertion

To make a specimen by needle insertion, the following 8 steps are required:

1) Killing, in order to make a specimen with complete shape, color and shape, it is often necessary to use the fresh live insects that have just been captured, so that it can die quickly in a short time, and it can be used with high toxicity and strong knockdown. Insecticides such as chloroform, carbon tetrachloride and the like come from poison bottles or poison tubes. The poison bottle and the poison tube can be made by using a wide-mouth glass bottle. The size of the bottle mouth can be determined according to the size of the insect body. The cork should be cork stopper, and the rubber stopper which is easy to be corroded should not be used. First put some wood chips on the bottom of the bottle, then pour the liquid into the solution to achieve just saturation, the liquid does not flow out, and then cover the layer with thick paper or cork. There are several venting holes on the paper or wood chips to allow the poison gas to pass through.

2) Remove the internal organs. Before making the specimen, the internal organs of the insect must be taken out, so that it can be quickly dried after the needle is inserted. But insects that are extremely thin like damselflies in the scorpion do not have to remove the internal organs. When dissecting, the forceps can be directly inserted from the neck of the insect and the joint membrane of the front chest and the back, and each organ is taken out. Or cut a hole along the connecting film of the back plate and the web on the side of the abdomen, and then remove the organ with tweezers. Then, a long strip of cotton plug was kneaded with cotton wool, and it was slowly stuffed into the hollowed-out insect cavity with a tweezers to keep the original body shape.

3) Temporary preservation. After the insects are killed by poison gas, they should be taken out of the poison bottle as soon as possible. After removing the internal organs, they should be placed in the pre-prepared cotton paper bag to avoid the insects being squeezed and deformed when carrying. damage. Paper made of cotton paper should be selected for water absorption, cut into squares, the size depends on the size of the insect body, just to cover the insect body. The absorbent cotton can be pulled a small piece about 0.5 cm thick and slightly smaller than the paper, flattened and placed in the middle of the paper. It is best to prepare a small piece of white paper attached to the cotton wool as a temporary cotton swab to record the time and place of the collection. When it is ready, you can temporarily wrap the insects inside the viscera and protect them from damage. The storage period should not be too long. It should be opened within 1~2 days, and the package should be opened in time to make it ventilated and dry without deterioration.

4) It is also soft, and the shells after drying and hardening are generally brittle. If no measures are taken to soften them, it is likely to break into small pieces at the touch, so it must be soft before the pins. The soft way is to use glass to change the soft cylinder or other utensils, add distilled water to the bottom, add a few drops of carbolic acid, place the insects on the overhead shelf, and seal it for 2~3 days. If you do not change the soft cylinder equipment, you can also directly immerse the insects in warm water, and use hot air to make it soft.

5) Needle insertion, insect needles for fixing insect specimens, made of stainless steel, from fine to thick, totaling 7th, 0th, 1st, 2nd, 3rd, 4th plant specimen number, 5th, etc. level. From 0 to 5, the 6-level needles are equipped with a needle cap. Only the No. 00 without a needle cap is only half the length of the other needles and is used as a double needle insert. For insects that have not dried, hardened, or softened after death, they are fixed with the needle described above. Which needle to use should be determined according to the size of the worm. At the beginning of the pin, first place the worm body to be placed on the worm's table or the table seam, and then select the appropriate stylus according to the size of the worm. The insect needle is inserted into the front part of the base of the front wing and the right part of the wing. The center of the chest or the center of the small shield is to the right, and other insects are inserted in the center of the chest.

6) In the whole position, after completing the needle insertion, the insects must be partially adjusted according to the most correct posture of the insect, such as the position of the wings, the curvature of the insect feet, the elongation direction of the antennae, etc. Adjust item by item to

make it completely the same posture as live insects! Some insect lovers like to fix insects according to their favorite posture, and can adjust the posture and position of insect body, wings, legs or tentacles according to their own requirements. .

7) Drying. After the needle and the whole posture, the insects can be placed in a safe and ventilated place for a period of time. This stage usually takes 1~2 weeks to completely dry out.

8) Preservation and preservation. The last procedure is to put an appropriate amount of anti-mite and anti-mold agent on the prepared insect specimen, and then insert the label. If the number of specimens is large, the specimens should be placed in the specimen box in separate categories and stored in a dry place protected from light. If you need to make an insect ecological view box, you can also arrange the insect specimens with the dried plants and flowers in the same glass cover, or in other art frames.

2.4. Treating Specimens

However, many people are willing to make dead pets into specimens, but there are also many people with opposite ideas. "I love my dog very much, but if one day it unfortunately leaves me, I will choose a cemetery to bury it, and will not make it into a specimen." A dog owner said that loving dogs is like love. Like a person, leaving it in your heart is the best nostalgia. It is not a living thing to make specimens realistic. The production of pet specimens has also caused controversy among netizens. The netizen with supportive attitude said: "If my pet is gone, I will make it into a specimen and let it stay with me. The price is not expensive, and it can be permanently placed at home." But there is quite Netizens said they could not accept pets as specimens. Some netizens pointed out: "Pets are like our children. Who will make their own intimate partners into specimens? I think the dogs are also very tired. They should be allowed to rest well." The opening pet specimen store must have advanced Disinfection and production methods can only be officially employed after strict inspection by relevant departments. Some "underground operations" have many unsafe factors lurking in them. It is not a bad thing to make a pet specimen, but it is the right way to truly "surface" to the public.

3. Experiments

3.1. Experimental Settings

(1) Research object

Specimen materials: euthanasia pet dogs, small experimental rats; experimental tools: scalpels, scissors, bone scissors, tweezers, wire, suture needles; experimental disinfection materials: washing liquid, camphor, boric acid, alum; experimental filling and suturing materials: absorbent cotton, Suture.

(2) Specimen production

1) peeling off the skin and separating the bones

Wash the pet's body with a cleaning solution. After the hair is substantially dry, a scalpel is used to cut an incision about 10 cm long in the abdomen. When cutting, pay attention to split the hair to both sides to prevent cutting off too much hair. The depth of cut is about 0.3 cm, and it can be opened sideways to the subcutaneous fat layer to prevent it from being too deep to open the abdominal cavity. You can also lift the epidermis and cut it to prevent it from being cut too deeply. Peel off from the wound to the sides. The fur is lifted in one hand and the skin is separated from the torso in the other hand with a scalpel. When peeling toward the tail, the muscle is cut between the femur and the pubis, until the femur, the femur is broken with a bone scissors, and the legs are separated from the torso. The proximal end of the coccyx is withdrawn and the distal end is

dissected with a knife to separate the lower part of the trunk from the skin. Turn the lower part of the trunk upside down, pull the skin on one side, pull the torso on the other side, and separate the middle scalpel from time to time. When the forelimb part is separated, it is disconnected from the scapula joint and continues to separate upwards. When the skin of the head is turned to the ear, it is cut from the depth of the ear canal, and the skin of the eyes and mouth is cut at the depth of the edge. The body is finally separated from the skin. The function of the reverse is to wrap the fur inside to prevent contamination by blood and other contaminants. Once bleeding occurs during peeling of the fur, it should be drained immediately, and talc should be applied to prevent blood stains if necessary. The separation of the limbs is still reversed. The bones of the limbs are separated from the skin by a scalpel. When the toes are separated, the meat pads are cut, the limb bones are broken in front of the toes, and then the phalanx is separated.

2) Fur processing

Spread the whole skin in the dish and use the surgical scissors to cut off the excess subcutaneous tissue and fat, respectively, to reduce the anti-corrosion pressure. Then, the whole skin is washed, the skin is washed with a fat solvent such as a detergent, the excess oil is washed off the skin, and then immersed in the disinfectant for a period of time for sterilization. After drying, treat with a preservative.

3) Skeleton production

The intersection of the limbs passes through the wire, and then it is supported by a wire from the head to the tail. The three main wires are wound with wire at the intersection.

4) Torso filling

Fill with absorbent cotton. Fill the limbs and tails first, then fill the torso, and fill the neck and head from the mouth. Then bend the limbs and put out the basic shape of the specimen. Lightly press the body with your hand. Each department feels whether the amount of cotton filled in each part is appropriate. Where further filling is needed, the cotton is clamped with long braids for modification and supplement.

5) suture opening

Stitch the opening of the abdomen, the inside of the limbs, and the tail. During the suture process, the cotton should be filled from time to time to make the body full and prevent the specimen from shrinking and deforming excessively after air drying. Finally, since there are no teeth, the mouth should be stitched together. Fill the cotton with the stitching and adjust the shape of the head. Finally add the right eye.

6) Attitude adjustment

Reinforce the stability of the specimen. The hind limbs are bent and seated, the forelimbs are straight, and the head is raised. When the balance is adjusted, the exposed wire is removed. At the same time, combing the hair, adjusting the look of the eyes, reflecting the overall beauty.

3.2. Commercialization Model Design

The project seeks to combine scientific and technological innovation with social applications that can be transformed into productivity, and practice pet art specimens.At the same time, conduct market research and marketing introduction, and strive to explore a commercialization model suitable for the transformation of the results of the project when the project is completed. Therefore, at the start of the project, a market survey questionnaire was designed and market research was carried out. The pet specimen production technology is the latest practical technology, and it is a new trend of entrepreneurship in the 21st century. Once it is learned, it is a tight talent. "Pet specimen" means

After the pet has passed away, the pet is made into a specimen by means of disinfection and

antisepsis. A cat, dog and dog with a step value of only a few hundred yuan is only made up of the owner's favorite. After death, it is spent thousands of dollars to make a specimen. From then on, the owner will continue to accompany him. Since this technology is introduced from abroad, it is generally necessary for multinational training institutions to have this technical training, plus the emerging technology, so the training fee is very high, usually 50,000 or 60,000 yuan. The preparation of pet specimens is subject to drug soaking, peeling of the flesh, filling and drying, etc., and the time is usually about half a month. After the specimen is made, it can be kept for 20 years. The production of ten pet specimens is different from that of general animal specimens. The production between the two is different. Pet specimens are far more delicate than animal specimens, because animal specimens only need to be shaped, and pet specimens need not only shape but also need Like, to get the approval of the pet owner. Every year, the total number of pets that die in China is more than 1.5 million. Grasping this business opportunity can greatly satisfy people's emotional needs for pets, and at the same time, they can bring rich returns.

4. Discussion

4.1. Fur Treatment

Investigate the washing of the fur with different solvents, wash it by controlled variable method for 30 minutes, and compare the hair loss quality (unit g) to find out the washing solution suitable for detergent in daily life. The experimental results are shown in.Table 1 and Figure 1.

Table 1. Hair loss quality after washing (g)

	Kitchen General Detergent	Carved Detergent	Carved Washing Powder	Laundry Soap
Pet Dog Fur	9.6	3.3	6.4	4.1
Pet Cat Fur	3.2	2.4	5.0	5.2
Experimental Rat Fur	2.1	1.6	8.4	2.5

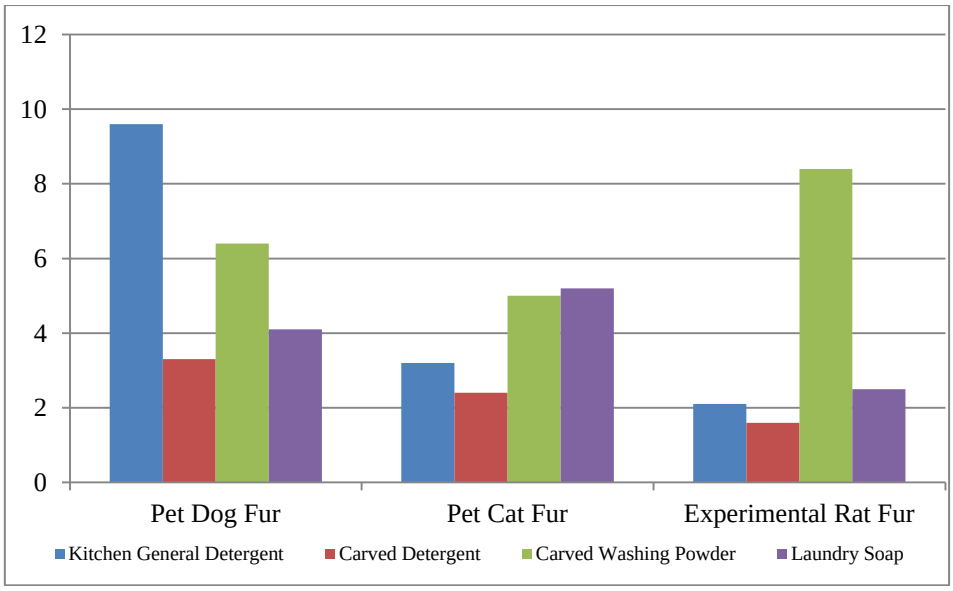

Figure 1. Hair loss quality after washing

4.2. Testing of the Body Filling Material

Different materials were filled in different animals, and the applicable materials were determined by measuring the height at which 20 kg of the weight was placed and the height of recovery within 15 s and as shown in Table 2 and Figure 2.

Table 2. Weight compression height (cm)

	Cotton Wool	Ordinary Cotton	Ordinary Sponge	Smashed Sponge
Pet dog Fur	15	5	6	5
Pet cat Fur	10	6	4	6
Experimental Rat Fur	5	3	2	4

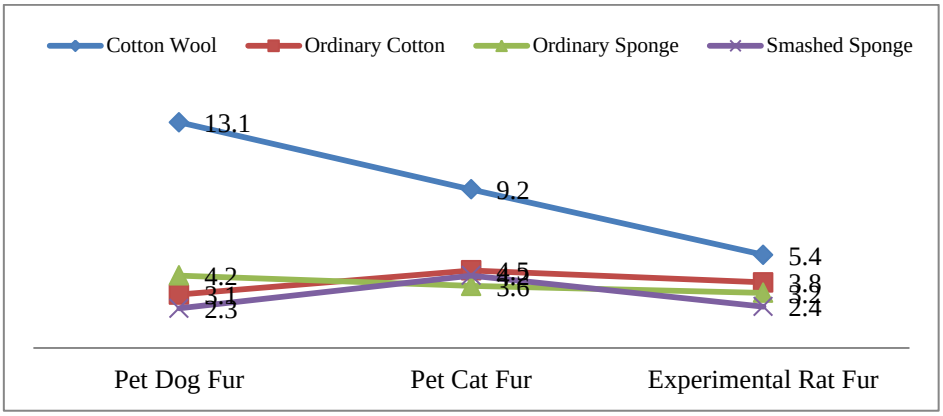

Figure 2. Fur recovery 15 seconds recovery height

4.3. Business Model Operation Survey

Around the community and around the pet shop, 100 people were randomly surveyed to investigate their attitude towards making specimens after the death of pets. People from different age groups were surveyed, 25 people of each age group, the most worried about pet specimens shown in Figure 3 and Figure 4.

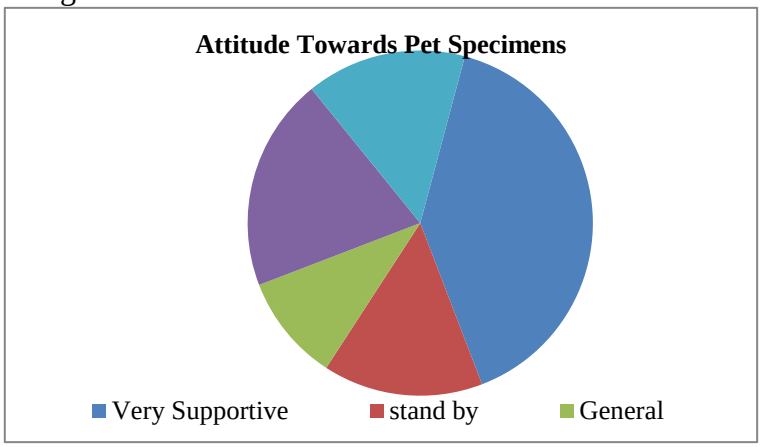

Figure 3. Attitude of the specimen being made after the death of the pet

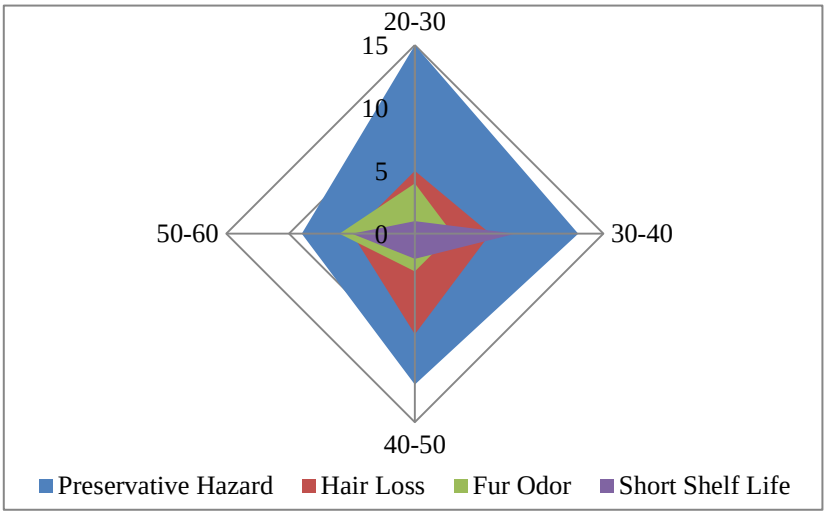

Figure 4. The most worrying problem of pet specimens

5. Conclusion

The specimens that have been made and dried have a taste that is unfriendly to the brain. Therefore, the preparation of animal specimens in terms of aromatization requires further research and more effective treatment. The idea of solving this problem is as follows: one is to spray perfume and powder on the outer skin; the other is to inject the perfume into the filler cotton with an injection inside.

In this project, the dog's specimens were selected to be euthanized animals. Since the hair of the dead animal loses its elasticity, after the animal is peeled, the method of loading the filler into the fur is adopted, and the actual length of the prepared animal specimen is larger than the state before the living, and is slightly distorted. The idea of solving this problem is as follows: First, the animals that are euthanized are subjected to specimen preparation in the shortest time to reduce the impact caused by the reduction of fur elasticity; secondly, the skeleton structure is first built according to the size and shape of the animal, and the filler is wrapped in the skeleton framework. On, then wrap the fur outside the skeleton, and then do the repair stitching.

Transparency allows pet shops that are willing to cooperate to carry out pet art specimen production business with great confidence. This will not only bring considerable economic benefits, but also greatly contribute to the influence of the industry. If the college is suitable, it can set up a pet art specimen studio.

Funding

This article is not supported by any foundation.

Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

References

[1] Grandin, T. (2018) Welfare Problemghat Persist Even though Scientific Research Clearly Shows How to Prevent Them, Animals An Open Access Journal from Mdpi,8(7), pp.124. https://doi.org/10.3390/ani8070124

[2] Petrides, A. K., Melanson, S. E. F., Kantartjis, M., Le, R. D., Demetriou, C. A., & Flood, J. G. (2018) Monitoring Opioid and Benzodiazepine Use and Abuse: is Oral Fluid or Urine the Preferred Specimen type, Clinica Chimica Acta, 481(6), pp.75-82. https://doi.org/10.1016/j.cca.2018.02.034

[3] Kantartjis, M., Melanson, S., Petrides, A. K., Landman, A. B., Bates, D. W., & Rosner, B. A., (2017) Increased Patient Satisfaction and a Reduction in Pre-analytical Errors Following Implementation of an Electronic Specimen Collection Module in Outpatient Phlebotomy, Lab Med,48(3), pp.282-289. https://doi.org/10.1093/labmed/lmx024

[4] Xue, L., Pang, Y., Fei, W., Zhai, W., & Zheng, W. (2017) Effect of Crystallinity on the Foaming Behavior of Polyethylene Terephthalate, Polymer Materials Science & Engineering, 33(1), pp.86-91 and 96. http://en.cnki.com.cn/Article_en/CJFDTotal-GFZC201701016.htm

[5] Ge, J., Liu, Y., Jiang, D., Zhang, L., & Du, P. (2019) Integrating Non-Precious-Metal Cocatalyst ni_3n with g-c_3n_4 for Enhanced Photocatalytic h_2 Production in Water under Visible-Light Irradiation, Chinese Journal of Catalysis, 40(2), pp.160-167. https://doi.org/10.1016/S1872-2067(19)63283-3

[6] Davis, W. E., Hicks, J. A., Foster, C. L., Holub, M. K., Krecek, R. C., & Richburg, A. W. (2018) Attitudes and Motivations of Owners Who Enroll Pets in Pet Life-Care Centers, Anthrozoos A Multidisciplinary Journal of the Interactions of People & Animals, 31(2), pp.211-219. https://doi.org/10.1080/08927936.2018.1434061

[7] Corker-Marin, Q., Pasko, A., & Adzhiev, V. (2018) 4d Cubism: Modeling, Animation, and Fabrication of Artistic Shapes, IEEE Computer Graphics & Applications, 38(3), pp.131-139. https://doi.org/10.1109/MCG.2018.032421660

[8] Everhart, J. (2018) Why We Should Care about the Sex of Specimens in Cadaveric, Animal, and Cell-Based Orthopaedic Research: Commentary on an Article by Jessica Bryant, md, Potential Sex Bias Exists in Orthopaedic Basic Science and Translational Research, Journal of Bone & Joint Surgery American Volume, 100(2), pp.e11. https://doi.org/10.2106/JBJS.17.01188

[9] Sun, Y. Y., & Guo, J. A. (2015) Application of Bioplasticization Technology in the Production of Animal Specimens, Information on animal husbandry and veterinary science ,3(5), pp.14-15.

[10] Zhang, D. H., Zhou, K. Y., & Sun H. Y. (2014) Comparison of DNA Extraction Methods for Ethanol Preserved Animal Specimens, Biology Journal, 10(6), pp.46-48.

[11] Mahmoud H.Alnamoly , Ahmed M. Alzohairy , Ibrahim M. (2021). El-Henawy, A survey on gel images analysis software tools, Journal of Intelligent Systems and Internet of Things, 1(1), pp. 40-47. https://doi.org/10.54216/JISIoT.010103

[12] Osama Maher, (2022). An Intelligent Optimization Model for Fragment Assembly Problem, Fusion: Practice and Applications, 7(2), pp.66-78. https://doi.org/10.54216/FPA.070201