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Research Paper

Preserving *songket* through sustainable packaging design

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Abstract

To date, we have never come across any significant study conducted on the *Songket* packaging design. Most available research findings focus on the motifs and how it is applicable to the contemporary world. *Songket* packaging design has not evolved parallel to the rapid growth of *Songket* textile design. From the observation done, today, most of the *Songket* especially *sampin* packaging design relies on conventional packaging and other reliable for preserving its quality in long term storage. This research aim to test out the applicability design special for storing *sampin*.

Keywords: *Packaging design; Sampin; Songket; Textile.*

1. Introduction

Because of its unique material and weaving technique, delicate *Songket* piece requires special handling care and storage technique. Improper handling of *Songket* storage may result in deterioration in quality and damaging the fabric.
It is important to note that *Songket* should never be directly folded [7-8, 11]. For storage, it is recommended to roll *Songket* with white wax paper to prevent contact between wefts and permanent creases.
Conventionally, Malaysian *Songket* packaging employs traditional technique which proved to be unreliable for long-term storage, hence compromise the quality. As such, there is an urgent need to revolutionize existing traditional packaging for *Songket* innovatively.
Therefore, research on *Songket* packaging should be a top priority to assist *Songket* cottage industry to maintain its competitiveness and relevance in global market. This is highly achievable through incorporation of material technology and creativity in designing packaging for contemporary *Songket* to further enhance the *Songket* appeal in aesthetic, uniqueness and quality.
In designing the new packaging for *Songket*, it is important to provide improved means and methods for packaging in a manner which effectively eliminates the creasing of the *Songket* as an incident of the conventional packaging.
Additionally, taking cues from user experience studies, the packaging should intuitively guide proper storage the *Songket*. It is also important to note that internal atmosphere of the packaging plays a big role in preserving *Songket's* integrity in the long run.
Hence, careful consideration on the selection of packaging material is vital for effectiveness as the best packaging and storage option. The factors involve humidity, lighting and internal storage temperature.

1.1. Songket as traditional treasure

Songket historically has been reserved as ceremonial woven fabric for exclusive use of local royalty and today it is a highly sought after traditional fabric and royally appointed *Songket* weaver has now evolved into a thriving cottage industry in East Coast of Malaysian Peninsular that produces exclusive fabrics for weddings and state functions [11].
By employing the supplementary weft technique, the *Songket* motifs are created using the traditional *menyongket* (Malay for 'to embroider') technique where the metallic threads are embroidered and woven into the cloth. *Songket* weaving is a laborious and tedious process that requires a great deal of concentration from the weaver. A beautifully woven *Songket* fabric would eventually highlight master craftsmanship and skills' of the weaver.
Because of its unique material and weaving technique, *Songket* requires special storage technique radically different from other fabrics. The *Songket* quality tends to deteriorate upon improper care and storage technique. The most important criterion in storing *Songket* is not to directly fold the *Songket* [7-8, 11]. Folded Songket will form permanent creases. Instead, *Songket* is rolled while coated with white wax paper to prevent contact between the wefts. Then, the *Songket* is placed in a storage boxes.
As in the past, cotton and spun silk threads are still very popular in the *Songket* industry today. Threads have also gained popularity due to its cheaper price compared to silk and cotton. There are a plethora of colors to choose from. Besides, the traditional gold and silver yarns used for *Songket* weaving, colourful metallic threads such as red, blue and green, amongst others began to dominate the trends in recent years [6].
The MHDC Craft Innovation Centre Malaysia (*Pusat Inovasi Kraf Tenunan Malaysia*) at Chendering, Kuala Terengganu was officiated on the 18th of April 2005 [14]. The objectives of the center are to conduct research and further develop Malaysian *Songket* thus elevate its level of competitiveness to a level comparable to other international textiles products, in addition to provide intensive training for keen prospects to master *Songket* weaving and related weaving services (e.g. yarn dyeing) to weavers [10]. The center also serves as a reference point for weavers to obtain the latest information on weaving innovations and the industry.

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1.2. Importance of efficient *Songket* packaging

Conventional practice mandates several care techniques for *Songket* safekeeping. Upon usage, *Songket* should be aerated for several hours at room temperature. It is important to note that no *Songket* should be subjected to wash. Avoid exposing *Songket* to direct sunlight. Cleaned *Songket* is then rolled in similar fashion to carpets and strictly no folding allowed as to prevent permanent creases to form. A highly delicate fabric such as *Songket* require extra care in handling to maintain its overall texture and elasticity of the threads. Prior to rolling, a medium - usually in form of wax paper, acid washed paper or even a *kain sarung* is placed in between layers of *Songket* to preserve weaving pattern integrity. *Songket* is then stored in a tube or loosely rolled and tied with a rope of cloth, put in place an overlapping each other [8].

As *Songket* are primarily constructed with natural organic fibers such as cotton, linen, wool, etc., microorganismal infection is an inevitable threat and it could affect *Songket* in any stages from processing through storage, with fungi infection being the most common microorganisms in *Songket* biodeterioration processes. Microbial growth on textile compromises strength and elongation, causing discolouration and changes in appearance [13]. They follow changes in oxidation state, degree of polymerization and breakdown of molecular structure. There are two major protective method of *Songket* recommended; controlling environmental physical conditions during packaging and storage and also biocides treatment.

Considering *Songket* packaging plays a vital role in preserving its quality, significant development in *Songket* packaging materials has to be accomplished to suppress microbial growth as well as protecting *Songket* from external microbial contamination particularly in Malaysian climatic environment. Throughout this progression, packaging materials need to be developed specifically to prevent the deterioration to the *Songket* resulting from exposure to air, moisture, or lighting condition associated with the *Songket* surrounding atmosphere. Both flexible and rigid packaging materials, alone or in combination with other preservation methods, have to be developed to offer the necessary barrier, inactivation and containment properties required for successful *Songket* packaging. Examples of flexible packaging used to inactivate microorganisms include controlled atmosphere, vacuum, modified atmosphere, active and edible packaging. Additionally, the combination of rigid packaging materials made from metal, glass or plastic with heat provides the most effective and widely used method for inactivating microorganisms [1].

In terms of *Songket* packaging design, significant innovative measures would definitely help to as part of marketing strategy to restore the value of the fabric to its rightful glory. Package design plays a critical role in purchase decisions. In [2] estimate about 73% of such decisions are made at the point of sale where more attractive packaging frequently wins [15]. In [12] argue that when the consumer is undecided, the package becomes a critical factor in the purchase choice because it communicates to consumers at the decision making time. In [9] calls this time “the first moment of truth” when the package functions as a silent salesman. In [12] further suggest that how consumers perceive the subjective entity of products, as presented through communication elements in the package, influences choice and is the key to success for many marketing strategies. In [16] demonstrate that visuals on the package can be a strategic method of differentiation as pictures are much more effective stimuli compared to words.

In addition to that, consumers process visual information faster and easier, particularly in low involvement situation. The right selection of package colours plays a vital role as well. In [4] suggest that colours could create potentially strong associations for consumers affecting their brand preferences. In [3] suggests that the approaches that work well in other media, e.g., minimalist design, do not necessarily apply to packaging design graphics. The products must figuratively jump out at the consumer in order that the consumer picks it out from the shelf, where it competes with many other offerings. Experts advise that the graphics designer should be as bold as package configuration, space and stacking position allow, using lively, persuasive colours, striking typefaces and prominent, creative photography or illustration [5].

A creative and innovative way of thinking is essential to elevate *Songket* beyond its conventional usage as traditionally worn costume, to a fashion statement. It should be packaged as a cultural product so that it still contains socio-cultural values. Considering *Songket* is one of our traditional treasure legacy, hence there is an urgent need to preserve *Songket* heritage legacy. However, the lack of awareness in the importance of storing the *Songket* among retailers and consumers is one of the challenges we need to overcome. The finding from this literature will provide guide to the researcher in designing and structuring out appropriate and innovative packaging design that further enhance *Songket’s* aesthetic, uniqueness as well as preserving its quality. In addition to that, the new packaging is anticipated to boost marketing values of *Songket* as well as consumer’s perception towards *Songket* in general.

2. Methodology

This research utilized qualitative method in collecting primary and secondary data in order to fulfill the aim of the research. Following are some action taken by the researcher.

2.1. Collecting literature material

Literature material gain from *Arkib Negara Malaysia*, Kuala Lumpur will help researcher to understand the right method in preserving *songket* especially *sampin* for long time. Suggested method will be compared with the finding from semi-structured interview.

2.2. Semi structured interview

Interview amongst thirteen *Songket* manufacturers, the best sample representative pool in *Songket* industry all around Malaysia at *Hari Kraf Kebangsaan*, Kuala Lumpur and several *Songket* weavers in Kuala Terengganu will help a lot in understanding the practice in preserving *sampin* and contemporary packaging design method. The entire finding will form design criteria in designing process afterwards.

2.3. Humidity testing

Testing will employ Ducame Hygro Set II Round Recalibrate-able Digital Thermo-Hygrometer which also known as Hydrometer and it is the perfect tool to measure internal temperature and humidity of new packaging design for the shape of the packaging kit would be in cylindrical form. Testing out relative humidity is a crucial process in order to determine the degree of appropriate comfort level environment suitable for *sampin* to be stored.

2.4. Expert validation

The new packaging design also entered design competition in Malaysia International Design Expo and Award 2015 (mIDEAS), *Anugerah Harta Intelek Negara* (AHIN) 2015 and British Invention Show (BIS) 2015, London. MIDEAS was held concurrently with Malaysian Technology Expo 2015 (MTE). Taking the opportunity to test out the quality and practicality of the packaging design by submitting the entry the competition which was organized by Malaysian Association of Research Scientist (MARS), Professional Trade Exhibition and Meeting Planners (PROTEMP) and Intellectual Property Corporation of Malaysia (MyIPO). In addition to that, by entering British Invention Show 2015 in London, in anticipation of international feedback.

3. Results and discussion

All finding will help in generating set of criteria for the new packaging design.

3.1. Result from reviewing literature material

Following sequential flow chart show how should the user store their *sampin* or *Songket* textile.

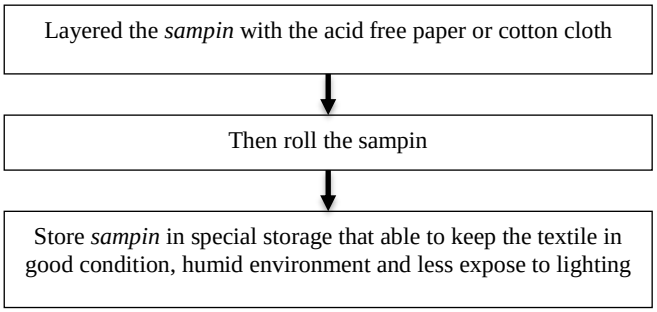


Fig. 1: Sequential step right method to store *sampin*

3.1.1. Potential solution

The basic shape of the packaging should be in cylindrical shape. Intuitively the packaging suggests the user to roll the *sampin* into the packaging for storage. This is because according to the research finding, rolling is the best way or method in preserving the quality of *sampin* or *Songket* thread for longer time.

3.1.2. Concept of the new packaging

Conventional packaging design disregards long-term storage capability, hence often discarded upon unboxing. With that idea in mind, the main concept for the new packaging design is to double as packaging and storage. The concept of the new packaging design should cater three situations; from display, look of the packaging itself and the function of the packaging which able to protect the *sampin* from harm condition.

- Display: Considered how to display the *Songket* packaging while retailing and when customer brings back home.
- The packaging look: Since the *sampin* itself reach thousand Ringgit Malaysia, the packaging itself should reflect the value of the *sampin.*
- Function of the packaging: The new packaging design should provide an airless environment, free from high humidity for *sampin* storage.

3.2. Semi Structured Interview

Majority of the respondent employs paper bag as part of branding and packaging option for *Songket.* The result from the graph shows, paper box is the most preferred packaging design option offered by the *Songket* manufacturer and paper bags as packaging option trails slightly behind paper box. Some of them even employs plastic bags, tote bags or even felt bags as their preferred packaging option for their merchandise.

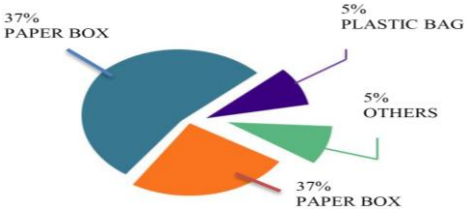


Fig. 2: Type of existing songket packaging design

They are fully aware that the conventional packaging option is not the best solution for long-term storage option to maintain the integrity of *Songket* piece. The conventional packaging option limits its usage strictly for distribution from the retailer to the customer and conveniently disregards the long-term storage option that each *Songket* piece badly needs. However, as per respondent suggestion, 30% of them strongly agree the industry is in dire need to improve means of the packaging design. The respondents also urge the researcher to develop better and more exclusive *Songket* packaging design fit for thousands of ringgit worth merchandise.

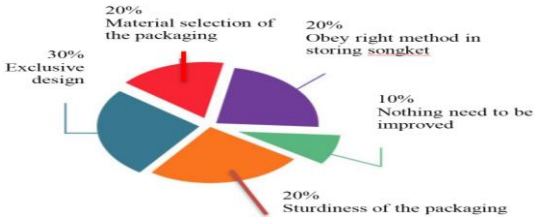


Fig. 3: Suggestion in enhancing new packaging design

Majority of the respondents display their *Songket* by hanging the fabric, fold and stack the *sampin* whereby *Songket* experts strongly object to that practice, as it would affect *Songket* quality in the long run. From what this research gathered, most of respondents are aware of such improper handling but the nature of their business namely limited space for visual merchandise display and also strategies employed to attract potential clients, hinder them from proper handling of *Songket.* Most of them will resort to explaining in great length on proper care and storage methods to their prospective clients.

Existing *Songket* packaging design collaterals such as paper bag, paper box and so on could only provide temporary solution and are not the best option to preserve the quality of the *Songket* for long term and does not reflect the versatility *Songket* carries.

Therefore, a research on new proper *Songket* packaging should be a top priority in order to preserve the *Songket* and in this instance, a *sampin* piece to last. The new packaging must embrace the idea of exclusivity and versatility of *Songket.* The new packaging should strictly adhere to right method in storing the *Songket*. Next part will elaborate more about overall idea and criteria in designing new *Songket* packaging design.

3.2.1. Design statement

To design an elegant and exclusive *sampin* packaging design to preserve *sampin's* quality.

3.2.2. Criteria for *sampin* packaging design

- Utilizing the best method to store *sampin* that is through rolling.
- Elegant and Exclusive Look.
- Visible part to partially expose *sampin* design pattern for visual sneak peek.

3.2.3. Propose design



Fig. 4: Packaging description

This design has been registered at the Intellectual Property Corporation of Malaysia (MyIPO) with following particulars:
Application/registration number: 15-00632-0101
Filing date: 29 May 2015
Class: 09-05-Industrial Design

3.3. Experimental result-humidity testing

Based on the best recommendation and convenient, relative humidity (RH) range for exhibition and storage should ideally be between 37% RH and 53% RH and 18.9°C and 23.3°C [17]. Based on his research, any display sample exposed to induced moisture will deteriorate in time. In addition, the following research states that the new environmental guideline are determined at 45% RH ± 8% and 21°C ± 2°C respectively [19].
This concept and measurement holds true and applicable for any precious fabrics and textiles. The safe range is determined at between 40% RH to 70% RH [18]. Exposing organic material to lower than 40% RH may result the sample to go brittle easily and 70% RH provides the ideal environment that encourage mold growth.

Table 1: Experimental results of humidity testing

Temperature	Relative Humidity
°C	(RH) in %
19	49
20	49
38	46
38	53
52	30

Therefore, humidity test for internal packaging is crucial to achieve the appropriate internal packaging humidity level to preserve *sampin's* textural integrity thus expanding its life cycle. Humidity test result favors positively the new packaging design and recommended as the best storage solution for *sampin* safekeeping. Author would also like to recommend that the packaging is stored away from direct sunlight and kept in room temperature as studies has shown that exposing *Songket* directly to sunlight for a long time results in deterioration of *sampin* textural condition as per suggested by *Songket* expert [8].

3.4. Expert review and validation

"Brilliant idea! Very practical and looks elegant"
Associate Professor Dr. Norwani Md Nawawi
Expert in *Songket* and lecturer, UiTM

"Original! It never crossed my mind to produce such a creative and innovative packaging design"
Prof. Dato' Raja Zahabuddin Raja Yaacob
Jury in mIDEAS competition

"The invention possesses novelty, inventive step and industrial applicability. Patent application is strongly advisable in order to protect the invention"
Mohan K
Registered Patent, Trademark and Industrial Design Agent-Malaysia and Singapore

3.5. Achievement

Received Gold medal Award in Malaysian Technology Expo (MTE) in mIDEAS category, awarded as Best Design Award or Special Award by Japan Intellectual Property (JIPA), silver medal in British Invention Show (BIS), London and consolation prize in *Anugerah Harta Intelek Negara* (AHIN).

4. Conclusion

The new packaging design is related to a method of packaging *Songket* textile especially s*ampin*. The propose design provide proper guideline in storing the *sampin*. Aluminum selected as material for the casing, the best option for long-term storage beside its aesthetic appeal and luxurious feels attached to it. Moreover, the packaging material is functional, sustainable material and also recyclable, anti-corrosive, abundantly available and importantly, it provides a vacuum-airtight environment and resistant to high humidity; highly suitable for *sampin* storage. With the new packaging design, it is anticipated that the *Songket* cottage industry will continue to thrive prosperously and remain highly competitive and versatile in global market.

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