Asian Journal of Multidisciplinary Studies
Vol. 1, No. 2, (2018)
ISSN 2651-6691 (Print)
ISSN 2651-6705 (Online)

Materials, Functions and Weaving Patterns of Philippine Indigenous Baskets

Andy Nestor Ryan Pazon
Joana Marie P. del Rio
Doctor of Philosophy in Science Education
College of Graduate Studies and Teacher Education Research
Philippine Normal University, Taft Avenue, Manila 1000
pazonanr@gmail.com

Abstract: Baskets serve as a national icon for Filipinos signifying agricultural and cultural relevance. It has been used as containers and traditional bags of the Filipino farmers for its products or a status symbol of the women amongst different indigenous groups. This paper discusses and analyses different materials, functions, weaving patterns and cultural relevance of the different baskets in the Philippines. Further, this paper presents a comparative analysis on the forms, style, usage and economic relevance of the different indigenous baskets. It is noteworthy that these baskets transcend cultural identity and information among indigenous Filipinos. The common raw materials used in making baskets are rattan, abaca, nito, tikog, buri, bamboo, pandan, coconut leaves and sticks, palm leaves, and beeswax. There are several baskets that use combined raw materials. The usage and function of the baskets depends on the form, style and the raw materials used as well as the indigenous group on which it originates. The several functions can be clustered into carrying agricultural products, storage, ritual use, food and paraphernalia containers, and auxiliary household functions. The weaving patterns depend to the raw materials used, design and style of the indigenous groups and function of the basket. The common weaving patterns utilized were checker weave, twill weave, wicker weave, twine weave and coiled weaves.

Key word/s: *Basket, Indigenous Filipinos, Basket Materials, Weaving Patterns, National Museum*

INTRODUCTION

Each indigenous group around the globe has a story to tell. The different creative crafts among indigenous groups provide rich culture carried through generations. The deeply rooted tradition in the Philippines can be accounted with the arts and culture of the country. One of which is the craftsmanship of which creates a tangible memoir in the history of times. In several instances where various craft forms are ingrained in the rich culture, and the art of the craftsman is passed on from generation to generation (The Arts of Craftsman, 2012).

One of the significant indicators of Indigenous Filipinos' craftsmanship is the basketry. Basketry as a handicraft provides a wide array of essential descriptions of the indigenous group and its social relevance as it becomes parts of the aspects of daily life of the community (UCLA Targeted News Service, 2013).

Baskets create and define a social significance of a certain indigenous groups. The Collins Dictionary defines baskets as a stiff container that is used for carrying or storing materials, usually the agricultural products. Baskets serves as an artifact that weaves significant ethnographic descriptions which can be systematically analyzed based on the raw material sources, methods of handicraft making,

forms and styles of making the baskets and the functions of baskets that can serve both cultural – historical purposes (Barber, 1991).

The different baskets made by different indigenous groups in the Philippines are based on diverse plant raw materials. Novellino and Ertug (2006) linked the utilization of the different plants to the significant ecological ramification, plant abundance or distribution on the specified area, and on the diffusion and transmission of basketry technologies and techniques passed through generations.

It is speculated that the Proto – Austronesians settled in Taiwan moved to Philippines by 3000 B.C. as suggested by Bellwood (1985). Novellino (2006), correlated that along with the migration, it is plausible that the early inhabitants of Northern part of the country brought them along the early weaved baskets.

In Cordillera Mountains, basket ranges in different forms and sizes according to its functions. The raw materials used in terms of the strength, basket functions, and techniques in weaving may be considered "unscientific" and primitive but entailed creative artistry and provide significant details of the indigenous group (De Vera, 2007).

Based on several documents available and the literature, there are vast selections of plant materials including vines which were used as a basket. Most of the plant materials used were rattan, bamboo and pandan in the Northern part of the country. Rattan are semi – woody climbers on which the fibers for basketry were obtained from the outer shiny layer of rattan canes (Novellino, 2006).

The Palawan produces some of the finest baskets in the country which varies in different sizes, shapes and types of weave which is mostly used as rice baskets (The Arts of the Craftsman, 2012). The big baskets in Palawan used for In Bulacan, egg baskets were made from split bamboo in which a curving base secures the eggs firmly in place (Basketry, 2015).

The different materials used may have constituted to be based on its function and locality or specific manipulatory techniques which is culturally prescribed (Mowat, 1992). In some indigenous groups, these baskets were finely made since it is featured in the different rituals especially those with significance in agricultural harvests.

In some parts of the country, baskets were very significant indicator of a sense of identity of women. Negritos for example, weaving of baskets is largely the work of women. Amongst the Batak, believed to be the descend from the first wave of Australoid populations which crossed the land bridges connecting the Philippine Archipelago with the mainland of Asia; if there were interethnic marriage, there is a matrilocality rules of common line of transmission of basket weaving knowledge. It is more evident that women have assumed the responsibility of transmitting the basket weaving knowledge to the women children both biological and the daughter in laws after interethnic marriages. Important transfer of information occurs such as the local folk – biological vocabulary and the use of rattan and bamboo as the main plant materials for making the Negrito baskets.

In Basey, Samar such as the tribes of Mamanwa, the plant material which is mainly used to weaves baskets and mats were both buri and tikog. The weavers use these to make intricate mats, bags, pouches, storage boxes, baskets and other crafts with the use of tikog. But, primarily due the strength of the tikog as a material, is widely used for baskets. Tikog stems are gathered and bleached under the sun for several days to dry out. Interestingly again, these handicrafts are done by women (The Women Weavers of Basey, 2015). The weavers' husbands take part in activities that require physical strength such as plowing and land preparation for *tikog* farming. For them, processing the *tikog* which requires bundling, counting the strands, drying, segregating the *tikog* by colors and size, weaving, mat embroidering, and marketing are too tedious, time consuming, and requires more dainty hands. Hence, men prefer to leave these activities to the women. They do, however, help

in dyeing the *tikog* because it requires a lot of strength to mix the *tikog* with the boiling dye solution and, consequently, lift the *tikog* from the boiling dye solution and hang them to dry.

Women are mostly in *tikog* processing, mat weaving, and marketing. The women's work time is much longer, from 10 to 14 hours a day on the average. The responsibility and labor of producing *tikog* mats and related products rests on the women. Further, Novellino (2006) pointed out that cultural preferences in the choice of material used for weaving a basket dictates rather than the ecological factors.

Baskets as its primary function as a container (Tarnai, 2017), he studied the different morphological problems of it. Consequently, when the sophistication of its morphology is being studied we deal with the different patterns of weaving and the materials used in weaving the basket. Further Tarnai (2017), cannot deny that the structural morphology differs from ethic groups.

The Manila Times (2018), recounted that the indigenous groups from all over the country were making its best to preserve the cultural tradition of weaving. According to UNESCO, there are two ways through which cultural heritages are preserved. First is through recording and archiving of cultural materials and second is to preserve it in living from ensuring it is transmitted through generations.

METHODOLOGY

Objectives of the Study

There are 112 ethnolinguistic groups in the country which basically takes the 15% of the population of the Philippines (De Vera, 2007). In each of these group, there is some unique characteristics of the baskets they made in form and function as well the materials used and its weaving pattern.

This paper presents and discusses the different materials, functions, weaving patterns as well as the cultural significance of the several samples of baskets from all over the Philippines. With the aid of the existing literature, it tries to present a comparative analysis on the forms, style, usage and economic relevance of the different indigenous baskets.

The functions of the basket are clustered according to the similarities of its usage among indigenous groups.

This paper further presents the different weaving patterns, style and techniques through comparing the different samples of baskets and making an analysis on the strength of the materials as well as the strength of the basket as a finished product.

Materials and Method

This paper uses an observation and documentation method for the presentation of the materials, functions and the weaving patterns of the different sample baskets.

The researchers documented the archived displays at the National Museum of Anthropology in the Entwined Spheres section where baskets and mats as containers, conveyors and costumes were housed. Several secondary sources available in the internet and other scholarly writings were used as a support to this paper.

Several baskets were also studied for documentation and some interviews of the old folks to conduct attestation on the functions of the different baskets in the Philippines.

RESULTS AND DISCUSSION

Basing on the merits of the archived samples of the baskets in the National Museum of Anthropology, the following data will be presented in a fashioned manner: description of the indigenous baskets in the Philippines, materials used in the production of Baskets, Functions or Usage of Baskets, and the Weaving Patterns of Baskets

The Indigenous Baskets in the Philippines

The different baskets from different indigenous groups echoed different information on agricultural, biological or ecological and traditional diversity depending to the site.

The photograph of the painting indicates that women generally use baskets as a container for transporting agricultural products and other food for the workers in the field. Baskets become the traditional icon for carrying harvests from the field.

The photograph was painted by Isabelo Quiles in 1991 where he depicted Bagobo basket weavers. In the painting, the rich tradition of basket weaving which was primarily performed by women is shown.

Throughout the history, women were empowered with this handicraft. In fact, the Batak or the Negritos women usually weave the *Begias* which are diagonally weaved baskets used for agricultural crops and rice. Significantly, when a young woman completes her fist woven basket, it can be an indicator that she has achieved the status of the other groups of women (Novellino, 2006).

***Begias*.** This basket is mainly used for agricultural crops, rice and edible non – timber forest products as well as snails and other aquatic organisms such as shells. (Image Credit from Novellino, 2006)

The body of this basket is mainly made up of Bamboo *Schizostachyum lumampao* (Blco.) Merr. (Poaceae). The bamboo is particularly abundant in seasonally dry, monsoonal forests.

The photograph on the side is another type of basket which serves as sea salt containers. This type of basket is made up of buri and abaca.These are used by the Negritos in Botolan, Zambales.

From the previous examples, it is best to note that both baskets were utilized by *Negritos* but different plant materials were utilized to form baskets. Also, we can notice that different raw materials were used to different functions of baskets.

Materials Used	Place of Origin
rattan	Palawan
	Mindoro
bamboo	Cagayan
bamboo, rattan,	Butuan
	Mountain Province
	Mindoro
	Batanes
nito, rattan	Puerto Galera
pandan, synthetic dyes	Palawan
bamboo, nito	Sindangan Bay, Zamboanga
	Panay, Bukidnon
rattan, bamboo, beeswax	Caraga, Davao
bamboo, rattan, nito, wood	Maranao
	Abra
bamboo, rattan,	Butuan
cotton cloth tassel, abaca	Mindoro Island
buri, nito, bamboo, bark	Calamintao, Occidental Mindoro
	Balabak, Palawan
	Palawan

Table 1. Materials Used in Baskets in Different Places

The photograph above is an example of a ceremonial raft of the Tagbanua from Baraki, Palawan. This basket is made up of bamboo and rattan.

a. Cradle – Itawes, Cagayan

b. Cradle – Eastern Visayas

The photograph are actual examples of *cradles*, a specialized basket used as sleeping basket for babies or a crib for infants. In photograph **a**, the materials used here were bamboo and wood, originated from the Itawes of Cagayan. In photograph b, it is made up of bamboo from Mamanwa of Basey, Samar.

The baskets presented gives us important information with the indigenous groups. The richness of information on the different baskets gives us an idea also on their knowledge of plant use.

Materials Used in Making Baskets

Different baskets from different indigenous groups use different materials and for functions.

Baskets were made from a single or combinations of different indigenous materials common to the place of origin. Some examples of the indigenous materials being used were rattan, bamboo, nito, pandan, wood, abaca and buri.

Rattan belongs to the Palm family (Palmae or Arecaceae) and characterized as

climbing, spiny palm. It is typically found in tropics and subtropics regions of South and Southeast Asia including the Philippines (Dransfield, 2002). On the other hand, bamboo is the tallest perennial grass that belongs to the family Poaceae and subfamily Bambusoideae. It is used as material for handicraft such as basket due to its strength, lightness, flexibility, hardness and versatility(Nirala, Ambasta, & Kumari, 2017).

Nito, a type of climbing fern that grows in parts of the Philippines is the name used for different species of Lygodium. It is also used in the production of baskets and bags.

Pandan leaves as well as the wood of some species are made into splints which are used for making coarse and fine baskets and bags.

Buri is another plant material for baskets, the largest palm species in the Philippines, with trunks that can grow a diameter of 1 meter and a height of 20 meter. It is widely distributed in the Philippines specifically in places at low elevation. The immature leaves, mature leaves and even mid-ribs of mature leaves are used in the manufacture of baskets and other handicrafts (Durst, Ulrich, & Kashio, 1994).

Raw materials used in basket weaving are collected or gathered at specific time of the year to ensure that they are suitable for weaving and will last longer.

Table 2. Comparative strength of materials used in baskets

Materials	Characteristics	Strength
buri	largest palm species in the Philippines	most utilized palm species in weaving
boho/ bolo	bamboo species with light and thin walls	easier to flattened into sheet and woven
tikog	sedge or grass-like which grows abundantly in swampy areas	woven or embroidered mainly for design
pandan	palm trees with cool, smooth and thick leaves	easier to prepare than buri and other sedges
nito	climbing plants that grow in forested areas	suited in making small, closed-coiled container, for decorating and lashing
rattan	semi-woody climbing palm with thorny stem	preferred material for basket weaving and binding due to its durability

For Buri, there are three species of this plant material which are commonly used for basketry, these are buri palm: buri, raffia, and buntal fibers. Buri is the matured leaf of the plant while raffia is the young shoot or leaf and buntal fiber is the long light colored strand extracted from the petioles of buri palms. They are woven into different products including baskets (Calapis, Daracan, Castillo, Carandang, & Abasolo, 2011).

Bamboo is a naturally occurring raw material which grows abundantly in most tropical countries. It consists of cellulose fibers aligned along its length which provide maximum tensile strength and rigidity (Li, 2004). Bamboo strips are commonly used in basket weaving because of its light yet rigid and flexible structure.

Tikog is a sedge plant which is abundant in marshland areas of the Philippines particularly in Leyte, Samar, Bohol and Mindanao. The weavers are using the stems which are bleached and sun dried to make baskets, pouches, storage boxes, bags and tobacco cases Tikog is considered as a weed so it grows naturally and abundantly in low altitude and swampy areas(Dichoso, 2010). It is preferred by weavers because of its grass-like structure which makes it easier to weave into certain products.

The use of materials in baskets differs depending on the materials available in the area, the type of basket being made, the preference of the weaver and the intended purpose or usage

(Koros, ND). For example, if a basket is intended to carry heavy loads, materials that would be used should be stiff and sturdy such as rattan and bamboo.

Flexible materials such as pandan and buri leaves are used if a basket is intended to be folded flat. Rattan is most often regarded as the preferred raw material for basket weaving and binding due to its durability. The stem or cane of rattan is solid, strong and uniform as well as highly flexible for basket weaving. Wood is also utilized for some basket particularly to provide a solid bottom and for handles(Dransfield, 2002).

It is noteworthy that the different materials used in making baskets undergo several processes such as drying, curing, and even dyeing. The several processes were to make sure that the raw materials that its strength will be rigid when loads are introduced to these baskets.

Functions and Usage of Different Baskets

Table 3. Usage and Functions of Baskets in the Philippines

Storage basket	Carrying basket	Container or receptacle	Kitchen utensils	Other equipment
agricultural products	crops and other products	liquid	small grain strainer	chicken cage
crops	foods brought to the field	water	coconut strainer	chicken coop
husked rice	harvested vegetables	liquor wine	plates	chicken nest
rice grain	harvested fruits	production	food tray winnowing	fish trap
beans and grains	fish	food	tray	eel trap
Cooked rice	tools	salt cured meat	root crops steamer	pouch
locusts	knife, bolo and other blades	fish		cradle
bark cloth	clothes	shellfish and snail		
clothes	back pack	salt		
fire-making devices	personal items	Tobacco		
spinning materials		food for rituals		
personal effects		ceremonial paraphernalia		

Philippine Indigenous baskets can be classified according to the following cluster of purposes or function: (1) storage, (2) carrying, (3) container, (4) ritual use and (5) auxiliary household use. These baskets vary in size depending on the items being stored, carried or depending to the specific function.

Baskets are primarily used for storing agricultural products, crops including fruits and vegetables, beans and rice grains as well as cooked rice and other foods. They are also used for storing clothes, fire-making devices, spinning materials and personal effects.

In terms of their carrying function, baskets are used to carry crops and agricultural products including fruits and vegetables from the field going to the house, caught salt water and freshwater fishes and the food brought to the field for lunch. Baskets are also used for carrying tools including knife, bolo and other blade forms. Back pack and suit case are baskets which are being used for carrying clothes and personal items.

Some baskets are designed as containers of liquids such as water, wine and other liquor while others are used as containers of food such as salt cured meat, fish, shellfish, snail and other preserved foods.

Baskets are also utilized in carrying food for rituals and other ceremonial paraphernalia.

Uses of baskets also extend to kitchen utensil such as plates, strainer, steamer, food tray and winnowing tray. Some baskets are designed for other utilities such as in poultry and fishing equipment.

The photograph above is a called Panirnian or the strainer made up of bamboo and rattan from the Ivatans of the Itbayat, Batanes.

Asian Journal of Multidisciplinary Studies
Vol. 1, No. 2, (2018)
ISSN 2651-6691 (Print)
ISSN 2651-6705 (Online)

Baskets vary in sizes, designed and type of materials but the most uniting feature is the function or uses. In general, baskets are used in the gathering, preparation and storage of food. Dry food is gathered, stored, and served in baskets while liquids are also retained in baskets that are waterproof. The uses and functions of baskets are always associated with the daily activities of people.

Weaving Patterns of Baskets

Basket weaving depicts traditions of the ethnic groups, coupled with their artistic creativity and their architectural applications (Tarnai, 2017).

Studying the basic structural morphology of the different baskets can be associated mainly on the structural significance attributed by the raw materials used, heritage significance and the function of the basket.

a. Closed Crossed – Over Under Weave

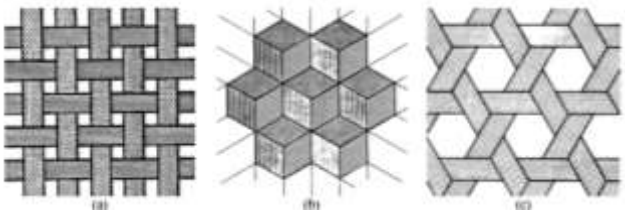
b. Closed Bamboo Double Twill Weave

c. Spaced Rattan Pentagon Pattern

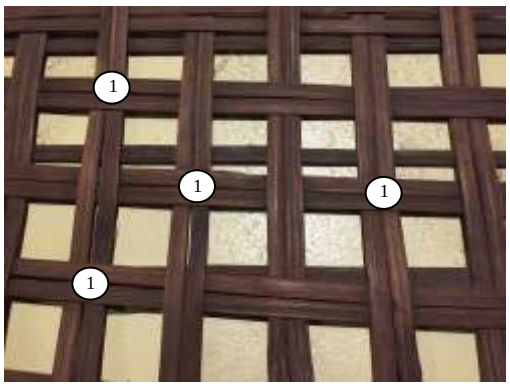
d. Closed Tetrahedron Buri Basket

The different baskets can be compared to the significant basket weaving patterns as identified in the museum. Although Tarnai (2017) presented a geometrical pattern and several types of weaving, it can be noted that even the width of the strips of raw materials can be interpreted mathematically.

Checker weave is also known as plaiting. It uses a straightforward technique in which the weft (horizontal elements) crosses over and under one warp (vertical elements) at a time. Twill is a decorative pattern in which the weft passes over or under more than one warp at a time. On the other hand, wicker weave is done when the weft material is woven over and under a stiff foundation or warp of rods or bundles of fiber. Twine pattern is achieved when two wefts cross over each other between warps. Variations of twining include differences in the number of wefts, the number of warps crossed by the wefts and the angle of the warps. Coiled weave is done by a technique which involves sewing. Coiling begins at the center of a basket and extends upward and stitched in spiral rounds each being attached to the round before it (Koros, ND).



Tarnai (2017) identified three types of common weaving of baskets in the world, these are (a) 2-way 2-fold (b) 3-way 3-fold and kagome which is the hexagon, triangle, hexagon pattern.



Common among the weaving pattern is the over and under weaving. In the figure above shows the vertex of the strips over the weaving.

Indigenous Baskets and Economic Relevance

Name: jar
Function: liquid container
Materials: earthenware and rattan
Location: Bontoc

Name: bukug
Function: basket
Materials: rattan, bamboo, beeswax, abaca
Location: Talomo river, Davao

Name: basket tray
Function: for spinning materials
Materials: bamboo, rattan, nito, wood
Location: Abra

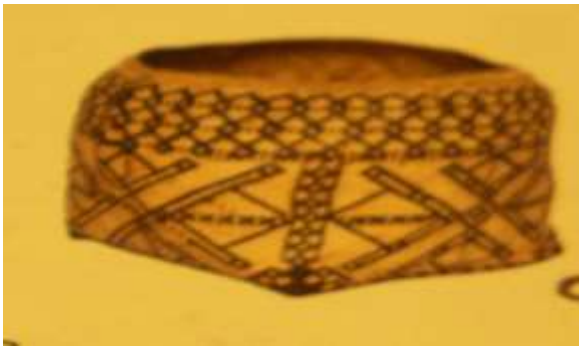
Name: Tupil
Function: lunch box
Materials: bamboo and rattan
Location: Antadao, Sagada

Name: Kabil
Function: carrying basket
Materials: pandan, wood, rattan, beeswax
Location: Kalagan

Name: Uppig
Function: lunch basket
Materials: rattan

Location: Ifugao

Name: Tagga-i
Function: rice basket
Materials: bamboo and rattan
Location: Ifugao



Name: bay'ung
Function: basket and pouch
Materials: buri, rattan, nito, bamboo, bark
Location: Mindoro island

Name: Binga
Function: bags
Materials: bamboo, rattan, abaca, beeswax

Location: Bay'yu, Mt. Province

Name: bamboo suitcase
Function: storage and carrying clothes
Materials: bamboo
Location: Singnapan, Ransang,Palawan

Name: lig-o
Function: winnowing tray
Materials: bamboo and rattan
Location: Bontoc, Mt. Province

Baskets with wide range and forms are produced from plaiting and twining. They are utilized for different purposes such as transporting products, food service, storage of food and clothes and as fish trap for fishing.

Storage

Tampipi is a type of baskets being used for storage of household items such as clothes and blankets.

Food gathering and Preparation

Winnowing tray, serving trays and fish traps are examples of baskets used in food gathering and preparation. Winnowing trays are

used to separate rice from its hull while serving trays are utilized as container of rice and other foods for consumption. Fish trap are used for fishing along flowing streams.

Photograph of a bobo or fish trap.

Personal baskets

Men in Bontoc are using small bags which are fitted beneath the arms to carry tobacco and other personal belongings. Topil, is a tightly woven basket which serves as lunchbox carry meals. Other important items such as jewelry are kept in small, covered baskets with subtle design.

CONCLUSIONS

From the analysis of the different photographs and the secondary sources about the indigenous baskets of the country, it is noteworthy that these baskets transcend cultural identity and information among indigenous Filipinos.

The most common raw materials used in making baskets are rattan, abaca, nito, tikog, buri, bamboo, pandan, coconut leaves and sticks, palm leaves, and beeswax. There are several baskets that uses combined raw materials.

The usage and function of the baskets depends on the form, style and the raw materials used as well as the indigenous group on which it originates. The several functions can be clustered into carrying agricultural products, storage, ritual use, food and paraphernalia containers, and auxiliary household functions.

The most common weaving patterns are checker weave, twill weave, wicker weave, twine weave and coiled weaves. There are patterns also which can be named as over – under, way folding and hexagon – triangle – hexagon pattern. Significantly, these weaving patterns are based on structural morphology of the baskets based on its functions and load capacity.

This study further recommends the following:

1. An indepth study on the structural morphology and geometric pattern of weaving with measurement dimensions on the materials used;
2. Loading capacity test on the different baskets;
3. Identification of the average lifespan of baskets; and
4. Specific determination of the cultural connections of baskets to the indigenous groups.

ACKNOWLEDGMENT

This study was supervised by Luisito Evangelista, Ph. D. of Philippine Normal University, College of Graduate Studies and Teacher Education Research.

We would like to thank also the Staff of National Museum of Anthrology for the kind-hearted accommodation.

REFERENCES

[1] Calapis, R. M., Daracan, V. C., Castillo, S. V. A., Carandang, W. M., & Abasolo, W. P. (2011). Structural Characterization of Buri (Corypha utan Lam.) Petioles. *Philippine Journal of Science*, *140*(1), 69–77.

[2] Definition of Baskets Retrieved at https://www.collinsdictionary.com/dictionary/english/basket dated Janruary 2, 2018.

[3] Dichoso, W. C. (2010). Some Familiar

Philippine Palms that Produce High Food Value. *DENR Research Information Series on Ecosystems*, *22*(1).

[4] Dransfield, J. (2002). Rattan: Current research issues and prospects for conservation and sustainable development. *Food and Agriculture Organization of the United Nation*. Retrieved from http://www.fao.org/docrep/018/y2783e/y2783e.pdf

[5] Durst, P. B., Ulrich, W., & Kashio, M. (1994). *Non-Wood Forest Products in Asia*. Retrieved from http://www.fao.org/docrep/019/x5334e/x5334e.pdf

[6] Li, X. (2004). Physical, chemical, and mechanical properties of bamboo and its utilization potential for fiberboard manufacturing. *Agriculture and Mechanical College, Master of*, 76. https://doi.org/10.1016/j.dyepig.2013.12.008

[7] Nirala, D. P., Ambasta, N., & Kumari, P. (2017). A Review on Uses of Bamboo Including Ethno-Botanical Importance. *International Journal of Pure and Applied Bioscience*, *5*(5), 515–523.

[8] Calapis, R. M., Daracan, V. C., Castillo, S. V. A., Carandang, W. M., & Abasolo, W. P. (2011). Structural Characterization of Buri (Corypha utan Lam.) Petioles. *Philippine Journal of Science*, *140*(1), 69–77.

[9] Dichoso, W. C. (2010). Some Familiar Philippine Palms that Produce High Food Value. *DENR Research Information Series on Ecosystems*, *22*(1).

[10] Dransfield, J. (2002). Rattan: Current research issues and prospects for conservation and sustainable development. *Food and Agriculture Organization of the United Nation*. Retrieved from http://www.fao.org/docrep/018/y2783e/y2783e.pdf

[11] Durst, P. B., Ulrich, W., & Kashio, M. (1994). *Non-Wood Forest Products in Asia*. Retrieved from http://www.fao.org/docrep/019/x5334e/x5334e.pdf

[12] Li, X. (2004). Physical, chemical, and mechanical properties of bamboo and its utilization potential for fiberboard manufacturing. *Agriculture and Mechanical College, Master of*, 76. https://doi.org/10.1016/j.dyepig.2013.12.008

[13] Nirala, D. P., Ambasta, N., & Kumari, P. (2017). A Review on Uses of Bamboo Including Ethno-Botanical Importance. *International Journal of Pure and Applied Bioscience*, *5*(5), 515–523.

[14] The Arts of a Craftsman (2012). Retrieved https://manilafame.wordpress.com/tag/rice-baskets/ dated January 2, 2018.

[15] The Women Weavers of Basey. (2015).

[16] https://reliefweb.int/report/philippines/women-weavers-basey