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BAN CHIANG POTTERY, UDON THANI PROVINCE, CREATIVE PRODUCTS UNDER THE CONCEPT "THE IMPRINT"

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Abstract

The objective of this research is to study the imprint for transforming patterns into creative product innovation with the purpose of designing and developing the products. The research evaluation questionnaire was employed towards the creative products influenced by “the imprint” conceptual design. This research was implemented by the use of Mixed Methods Research. The researcher started with a qualitative research method by studying the data through descriptive analysis methods followed by quantitative research methods. Drawing upon the study on the perceptions and evaluation on the design, the majority of informants includes 3 design experts, a group of 3 pottery entrepreneurs, and a group of 483 consumers. The research field is mainly in Ban Chiang Community Area, Nong Han District, Udon Thani Province.

The research findings indicated that there were 5 types of imprints discovered: 1. Trees, flowers,

and fruits, 2. Auspicious animals, 3. Nature, 4. Artificial patterns, decorative patterns and utensils, 5. Beliefs in creative product design under the concept of imprint. The findings on design evaluation revealed that the imprint concept was applied on 3 types of pottery products, namely 1. Products for office desk ornaments 2. Products for home decorative lamps 3. Jewelry products. Moreover, the finding suggested that there are uses of technique of rolling patterns onto the clay to design a home spa product and technique of painting patterns on beads to design jewelry products with the mean of 4.80 and the standard deviation of 0.40 at the highest level. Additionally, the application of rolling pattern technique onto the clay to design a lamp product had its mean of 4.38 and the standard deviation of 0.00 at a high level. The implement of the technique of rolling patterns on the clay to design products for office desk ornaments had its mean of 4.26 with the standard deviation of 0.46 at a high level.

Introduction

Udon Thani Province is one of 55 secondary tourist cities with an eco-tourism model to open up the opportunity for tourists to explore way of community in natural and cultural resources amidst the surrounding mountains of the national park. However, it is still lacking in design and development of creative products under the concept "The Imprint" of Ban Khiri Wongtok which responds to the lifestyle of the new generation to serve the needs of tourists and the approach to add value with technological and innovative knowledge to achieve higher quality and valuable products. This research aims for the design and development of creative products under the concept "The imprint, Innovation of Creative Wisdom Based on the King's Science", Udon Thani Province. The main purpose of this research is to produce unique products that meet the standards and are value added by employing product development and enhancement strategy as a tool to create products with higher quality and effectiveness. In addition, the knowledge management was carried out in this research in terms of creating value addition to the products, promoting product development and packaging to meet standards as well as upgrading the production process to reach to the standard. As a result, manufacturers are persuaded to enter standards system for each product category. The product quality is finally suitable or in accordance with the market demand.

Drawing upon the knowledge management for creating added value to the products in order to promote the design and development of souvenir products and trademarks including packaging to meet standard level (Kolková & Ključnikov, 2021), its purpose involves promoting the production of new products that are unique to the market by developing extensively local wisdom by studying local arts and culture and applying it to product design and product packaging for community enterprises for creating sustainable creative economy development (Boonpracha, 2021; Bukantaitė & Sederevičiūtė-Pačiauskienė, 2021) which is in line with the critical strategy of trade in Udon Thani province. This is aimed to achieve the goals of the provincial strategy to obtain product features that are suitable for use, unique and add value to satisfy the needs of consumers that will be able to increase income to establish a strong community economy. This will lead to the presentation of the development guidelines in terms of extending the local wisdom and promoting the increased income for community product manufacturers which is an approach to create prosperity for the community. Consequently, the living status of people in the community is improved, the locals also have the ability to afford for a healthy diet by producing or managing locally available resources to become quality products. The

products are characterized by possessing a community identity that reflects the local arts and culture, with the basic principles from local wisdom to international level. When a product is mentioned, it does not refer to the product alone, it involves a process of thinking including creativity and invention, conservation of wisdom, tradition, art and culture, the expansion of local wisdom and knowledge exchange to become quality products with distinctive selling points known throughout the country and around the world. Therefore, the conservation of cultural heritage and Thai arts and crafts not to fade away which leads to acquiring the solutions for product feature development, Udon Thani Province. It also promotes the production of new products of Udon Thani Province with uniqueness to the market by further developing local wisdom through nurturing research and development to create products for commercial use. Establishing networking and connecting local educational institutions with local scholars is initiated for the integration of the knowledge body in order for value addition to the product.

Since Udon Thani province has a variety of tourist attractions and the number of tourists visiting increase every year. Therefore, the researcher went for field survey to interview with the sellers of products and souvenirs to identify the arisen problems. It was found that the creation of souvenirs that can convey the identity of Udon Thani, is still unclear. This issue is considered a critical problem because souvenirs serve as a reminder of the places the tourists have traveled to (Paraskevaidis & Andriotis, 2015). In addition, souvenirs are important mementos of events in such tourist attractions (Wilkins, 2010). If souvenirs are lack of representativeness in conveying the Udon Thani identity, then consumers including tourists will become uninterested in buying them. There are various types of souvenirs which can be found in Udon Thani, such as pottery, a reminder of the tourists of that place where they want to come back to visit again.

Research Objectives

1. To study the imprints for applying them as an innovation of creative product under the concept "The Imprint" of art and culture which can boost the level of competitiveness.
2. To design creative products under the concept "The Imprint" of art and culture which can increase the competitiveness.
3. To assess perceptions towards creative products obtained from the application of the design and development of the imprint concept leading to the increase in the level of competitiveness of Udon Thani Province.

Literature review

Ban Chiang pottery, Udon Thani province, creative products under the concept "The Imprint". The researcher has studied the documents and related research in conducting research as follows:

Udon Thani is a province which lies in the upper northeast of Thailand. It is an operating center for the Upper Northeastern Provinces and the center of the Mekong River Basin. Formerly, the area of Udon Thani city today was Ban Dua Mak Khaeng, which has long been contemporaneous with Vientiane Lan Xang Kingdom. The undulating area in the northeast and east of Thailand are shallow. The majority of its topography are upland and rice fields whereas some are low hills.

Creative Economy or Creative Industries (Creative Industries or CI) refers to a group of manufacturing activities that rely on creativity as an important raw material. This includes the

processes of creation, production and distribution of goods and services that use intellectual capital as the basic factor of production. They are activities based on knowledge that includes art, marketing and intellectual property rights. The creative industries are able to produce both tangible and intangible products with creative content, economic value including marketing goals. In addition, creative products can also be specially manufactured products or mass production which arises from the connection between artisans or handicrafts and the industry sector. The interconnected industries involve traditional knowledge group such as arts and crafts, performing art group such as theater, printed and literary group such as books, music group such as concerts and CDs, visual art group such as painting, audio-visual group such as film and television, design group such as architecture, and digital and multimedia group such as software and games etc.

Creative Industries Classification organized by UNCTAD, categorizes creative industries into four main groups as follows (Kusuma Vali, 2015).

Heritage or Cultural Heritage is a group of industries related to history, archaeology, culture, traditions, beliefs and social conditions, etc. It is divided into two groups: Traditional Cultural Expression such as arts and crafts, festivals and celebrations, and cultural sites such as historic sites, museums, libraries, and exhibitions etc.

Arts is a group of creative industries based on art and culture, categorized into two groups: Visual Arts such as paintings, sculptures, photographs and antiques, etc., Performing Arts such as music, drama, dance, opera, circus and puppetry, etc.

Media is a group of creative production media that communicates with a large group of people. It can be classified into 2 groups: Publishing and Printed Media such as books, newspapers, and other publications, and Audiovisual such as movies, television, radio, and other broadcasts, etc.

Functional Creation is a group of products and services that meet the needs of variety of customers. It is divided into 3 groups: Design group, such as interior design, graphics, fashion, jewelry, and toys, etc, the New Media group is software, video games and digital content, etc.; and Creative Services group including services in terms of architect, advertisement, culture and recreation, research and development and other services related to digital and creativity, etc.

The concept of strategy means a carefully thoughtout plan with a step-by-step nature, flexibility and adaptation to changes according to the situations. It is aimed to overcome competitors or to avoid obstacles until the desired goal can be achieved. Strategy is synonymous with strategy used in combat-related meanings. The word “Strategy” is rooted in English, used in the early days of military and warfare. It refers to the art of strategic planning and battle to defeat the enemy. It is derived from the Greek word “Strategia”, meaning the command of the army. (Charoenwongsak, 2006)

The concept on development of community potential refers to the capacity of resource management which communities perform to respond to development of the quality of life of the community, including the management of resources and the environment, the application of tools and technologies for living in accordance with the ecology of the variety of each community. Supporting factors are the ability to learn, resources available in community, community members and management in the community (Rattana, 2006)

In order to create added value for products, Vejjajiva. (2009) stated that the approach of creative economy in creating new products and services based on the application of thinking (creative) in

connection with cultural roots, social technology and well-being in proper and seamless integration process. As can be clearly seen, Japan has successfully adopted this strategy in creation of packaging to add value to a wide variety of products.

Upachitkul, et al (2006) asserted that to improve the potential in the development of tourism souvenir products in the upper northeastern region, the objective is to study and select types, styles and materials to produce good quality souvenirs. The findings revealed that the perception of all respondents including experts and gift designers, manufacturers and business operators of souvenirs and tourists on the design and development of locally available materials to produce souvenirs in terms of information, types, features of souvenir items are in the same direction. The product features should reflect that and also be consistent with local identity. This is in line with what Amatayakul (2006) researched on social factors, impact and community participation on cultural tourism, Koh Kret Community. Base on the study towards the impacts and changes of the Koh Kret community being developed as a cultural tourist destination, it was found that there were impacts and changes, that was, such development in terms of the economy could create income-generating, jobs, improve the quality of life for people in the community. Sangchumnong (2019) affirmed that tourist attractions that can meet the needs of tourists, will have positive effect for the creative economy. In addition, Chainok (2010) discussed the guidelines for the development of cultural tourism. A case study of Ban Dan Sai Dan Sai District, Loei Province was applied with the purpose of finding a solution to develop cultural tourism that is appropriate and in accordance with the context of Ban Dan Sai. Dan Sai District, Loei Province. The findings earned from a case study of Ban Dan Sai. Dan Sai District, Loei Province towards cultural tourism development guidelines reported that tourism attraction is created from the collaboration of Government agencies involved in tourism together with people in tourism areas in a new form of tourism that meets the needs and interests of tourists such as health tourism, adventure tourism, religious tourism, convention and exhibition tourism, and sports tourism, etc. (Trauer, Ryan, & Lockyer, 2003). This is consistent with the concept of Tepsing and Boonprakarn (2019), which adapted the art and environment of Wat Tham Khao Rup Chang in response to the need to conserve the natural environment, which is significant for sustainable tourism.

Research methodology

The research on Ban Chiang pottery, Udon Thani province, the creative products under the concept “The Imprint” was conducted by the defined research method as follows:

Research Filed, Ban Chiang, Nong Han District, Udon Thani Province

Population was a group of design experts, pottery entrepreneurs and consumer groups

The sample group in this study consisted of 3 design experts, 3 pottery entrepreneurs and 483 consumers by employing Sample random sampling.

Research Tools

1. The study on history, imprints, physical and community characteristics of terrain, production processes, shapes, patterns of art and culture in Udon Thani Province.

2. the research assessment questionnaire on the design and development of Ban Chiang pottery,

Udon Thani province, the creative products under the concept "The Imprint"

3. the research assessment questionnaire towards Ban Chiang pottery, Udon Thani province, the creative products under the concept "The Imprint"

Data Collection

The researcher carried out the data collection method from research papers, articles, to obtain data that meets the research objectives. The methods for data collecting are as follows:

1. Collection of data from the study of imprints for applying the patterns to bring about the innovative and creative products under the concept "The Imprint" of art and culture. This leads to the increase in level of competitiveness.

1.1 Documentary research. By studying and researching data from books, textbooks, academic documents, journal articles and information from the Internet, the study was implemented towards the theory and related research which the researcher has applied some information in the research in order to identify the problems arisen and collect research data used for the application of product design.

1.2 Study on the physical and community features of Nong Han District's terrain, Udon Thani Province by focusing on the application of folk wisdom in pottery.

1.3 Study data on traditional and modern pottery patterns in Udon Thani Province

1.4 Study on the process and production process of pottery, Udon Thani Province including shapes, patterns,

1.5 Study data on pottery, Udon Thani Province, gained from the interview of 3 design experts. The data was collected through observation, recording by writing and photography.

2. Collection of data for design and development of creative product innovation under the concept "The Imprint" of art and culture which can enhance the competitiveness level.

2.1 Documentary Research. Studying and researching data from books, textbooks, academic documents, journal articles and information from the Internet. Based on the study of the theory and related research, the collected data was analyzed and inputting into the product design process in Nong Han District, Udon Thani Province with the purpose of achieving the level of beauty and suitability.

2.2 Study data on product design for pottery in Nong Han District Udon Thani Province. Data collection was conducted through meeting with 3 experts in pottery in order to design (SKETCH DESIGN) to create patterns and shapes of products.

3. data collection to assess the viewpoints on creative product innovation derived from design and development based on the concept of cultural imprints to boost overall competitiveness, Udon Thani Province.

3.1 Study on marketing data to assess the perceptions towards creative product innovation obtained from design and development of 100 tourists who choose to purchase products.

Data Analysis

1. The analysis of data obtained from the study and analysis of documentary research, history, physical and community features of Ban Chiang's terrain, Nong Han District, Udon Thani Province. The body of knowledge on the study in relation to research field, way of life, patterns, wisdom, was collected.

2. The analysis of the data on design and development of Ban Chiang pottery, Udon Thani province, creative products under the concept "The Imprint"

Results

1. The findings of the study indicated that the imprints are applied as a creative product innovation under the concept "The Imprint", of art and culture. This could increase the level of competitiveness.

1.1 The study on the physical and the community features, Udon Thani province is carried out by gathering knowledge about the study field, way of life, features, wisdom, and the outstanding characteristics of Udon Thani Province's terrain. It was found that its topography is an upland plateau with an average elevation of 187 meters above sea level. the landscape slopes into the Mekong River in Nong Khai Province, surrounded with rice fields, forests and mountains. Most of the area is covered with sandy soil and laterite soil. With the bottom layer is covered with shale soil, it does not store water or hold water in the dry season. Some areas are saline soil which leads to lower agricultural productivity, whereas some areas are undulating with scattered flat areas. The landscape of the western area consists of contiguous mountains and forests. The province has an important mountain range, namely the Phu Phan Mountain Range that stretches and extends from the northern end of the province. From historical and archaeological evidence, it is found that the present location of Udon Thani Province is considered the prehistoric human habitation about 5000-7,000 years ago. With the evidence of the discovery of Ban Chiang, Nong Han District, and the color paintings on the cave walls at Ban Phue District, it is well shown and widely accepted in the field of study of history and archeology internationally that it is the site of the human habitation in prehistoric period, with a high level of civilization and possibly inherit this prosperity to China. Especially, the colored pottery at Ban Chiang is assumed that it may be the world's oldest colored patterned pottery. Ban Chiang patterns are related to popular auspicious patterns and can be applied in community product design. This is in line with Chen's (2013) concept of combining auspiciousness with modern clothing designs. As a result, unique products are manufactured and in line with market demands. The Original Ban Chiang motifs were analyzed for characteristics related to the popular auspicious patterns in order to obtain patterns that can be applied to future product designs and to make the products unique and recognizable. This is conforming to the concept of Distanont.A, Khongmalai and Distanont.S (2017) which combines traditional local knowledge with modern management in order to bring about a wide range of innovations. When comparing the pattern of traditional Ban Chiang with the patterns of 5 target countries, it was found that there was a similarity to the concept of Daradat (1996, 174-179). He pointed out that human beings know more about beauty, then arrange and make the combination of the lines that are drawn straight, diagonal, zigzag and curved, alternately making them look more beautiful. Later, it was known that the lines were coordinated to create geometric shapes such as squares, circles. When ideas and craftsmanship arose, natural shapes such as leaves, flowers, and animals were, therefore, adapted to form the patterns of each nation. Zi (2017) also stated that auspiciousness is associated with happiness, wealth, security, safety and life longevity. When applying auspiciousness to the pattern, it corresponds to the concept of Thepsing (2005, 95-97) who concluded that the popular Chinese auspicious patterns use 1) Animal group pattern. The dragon is the most common animal motif because the Chinese ideal showed that dragon is a symbol of Yang, perfection,

creativity, agility, power, wealth, good fortune, protector and destroyer status 2) Plant stripes pattern, which signifies different meanings, such as tenderness, progress, and prosperity depending on that plants 3) Natural stripes pattern, is featured as an emblem of happiness, peace, good fortune, humility according to types of nature. 4) Artificial pattern and 5) color. Chinese people believe that Red is a timeless color and the color of life. It is a symbol of the sun and yang. Red and yellow gold serves as a symbol of power and prosperity. It also signifies the meaning of happiness and good fortune. Chinese people believe in patterns and their belief is consistent with the Japanese auspicious patterns according to the concept of Arunothai (2006, 85-88). Whereas India and Laos will possess patterns representing symbols that is closest to Thailand's belief. It is assumed that the consistent belief of the two countries derives from the similar belief in Buddhism. As a result, the meaning of the pattern is clearly connected, for example, the snake pattern has the same belief in the serpent conveying the symbol of greatness, abundance, ascendancy. This is consistent between the ideas of Arunothai (2006, 65-67) that Egypt existed in the same period of Ban Chiang. There is archaeological evidence in the prehistoric era that a belief in bringing auspicious symbols from animals which has different auspicious meanings. Similar to the concept of Daradat (1996, 191-193) which symbols can convey gender or person, representing knowledge, abundance.

1.2 The study on traditional and modern pottery patterns, Udon Thani Province. The lifestyle of the new generation responds to the needs of tourists and value addition technique through technological knowledge and innovation to reach higher quality and valuable products with the implementation of innovation of Creative Wisdom based on the King's Science", Udon Thani Province. It is the territories that are Thailand today, showing the evident of a prehistoric human habitation for as long as other sources of the world, probably as long as five hundred thousand years. As evidenced by the excavations of Thai and international archaeologists, who have already discovered especially the territories that are northeast of Thailand. the sources of human evolution can be significantly confirmed. Because it is a source of archaeological excavations that are considered critical to the history of mankind. It is the important evacuation site that the Archaeologists and the office of Archeology, the Fine Arts Department have been excavated and discovered in the northeast, which is recognized by international archaeologists as a site of advances in the field of culture since prehistoric times. This includes the excavation at Ban Non Nok Tha, Na Di Subdistrict, Phu Wiang District, Khon Kaen Province and at Ban Chiang Ban Chiang Subdistrict, Nong Han District, Udon Thani Province. The excavations at Ban Chiang especially, is a renowned archaeological site throughout the world.

1.3 The study on the steps and production process of pottery, Udon Thani Province, shapes, patterns, and local wisdom inspired the development of a new product concept in order to enhance product wisdom, culture and local identity. Prehistoric pottery making consists of making clay into strips and then laying coils in a circle on the clay forming as a flat sheet. Then a method of forging with wood and stone will be used as a container. The flat sheet is paddled into the bottom part of the container, and the coiled part is paddled into the body or the upper container and lip of the container. Later clay was molded into lumps and placed on top of a flat clay plate, then pinched pots the lump of clay to create the inside hollow into a cylindrical shape. it was then paddled with "Hin du" stones and patterned wood to mold it into the container. The flat sheet will be paddled into the base of the container and the clod of earth will be molded to become the body or the upper container and the lip

of the container. After molding process is completed, it is fired by the outdoor firing or pit firing methods which use a temperature of 500-700 degrees Celsius. Patterns of pottery in Udon Thani Province comprises of a scratch pattern and painted in gray – brown. Later, the red paint pattern is created which the color used for painting is called earthy color. It consists of ingredients to make it long lasting. It has not yet been proven that humans wrote these patterns with any tool, but the red clay line had a moderate thickness that moves on the shape.

1.4 The Interview with a group of 3 experts involved in pottery making in Nong Han District Udon Thani Province to obtain clear information related to traditional and modern pottery making, data on pottery and the outstanding features of pottery. Interview and field visit were carried out with participation of design experts and local entrepreneurs. The interview method was conducted in the form of in-depth, a one-on-one group interview with producers, distributors and consumers. Furthermore, the observation method was involved in this study in terms of both forms of participant and non - participant.

2. The research findings of design and development of creative products innovation under the concept "The Imprint" of art and culture. This approach can improve the level of competitiveness.

2.1 The concept of designing pottery products. The search for uniqueness leads to product design inspiration. Experiment with product design practice and patterns development leads to creative art products. The perceptions of expert and consumer towards pottery products derived from the final design of the research was explored in order to evaluate the design of the redesigned creative product. The design and products with Creative Product Innovation gained the inspiration from the design and development of product prototypes with the analysis of fabric products in aspect of features of the product. The researcher has prepared a prototype, product identity in Udon Thani area, in order to design and develop.

The researcher studied the design and development of creative product innovation and the results of design analysis. Determining the design concept with the community and entrepreneurs is a process aimed to study the needs of design and development of creative products. The preliminary data was then analyzed and interpreted which was used as a source for design. The designed pattern was proposed and presented to product design experts and then be modified according to the advice of qualified experts. The updated and modified data was utilized for the creation of a product prototype and product creation. Finally, an assessment of perceptions towards the design and development of creative products innovation was carried out.

2.2 Design and product based on creative products innovation derived from the design and development of product prototypes. Fabric products was analyzed in term of pattern of the product. The researcher has prepared a prototype Product, product identity in Udon Thani Province area to design, develop and study the process of creative thinking and its application in the analysis of product of pattern. Moreover, the researcher has created an idea sketched to propose the experts in the field of design.

2.3 To assess the perceptions towards creative products inspired from design and development based on the concept of cultural imprints to enhance the competitiveness of Udon Thani Province.

There are findings of the analysis to assess the perceptions towards creativity of product innovation from design and development based on the concept of cultural imprints to increase competitiveness,

Udon Thani Province. The research was carried out by exploring products that the researcher has carried out based on creative product innovation philosophy. The viewpoints on product innovations of the informants involving a group of 483 tourists and people in the community area including handicraft shops, were evaluated. A sample group of consumers at the souvenir shop were randomly selected. The findings of the analysis of the satisfaction assessment process of vendors and consumer groups towards innovative creative products that were designed and developed according to the concept of cultural imprints, can increase the level of competitiveness in Udon Thani Province

From Table 1, the results of the analysis of the respondents who completed the research assessment form towards the creative product innovations by design and development according to the concept of cultural imprints to boost competitiveness in Udon Thani Province. The assessment was classified by gender, age, education level and occupation. Drawing upon the sample size of 483, The majority gender of the respondents were males at 243 persons, representing .50.31 percent, whereas 240 respondents are female, representing 49.69 percent.

Based on the sample group of 483 persons participating in the research, the findings of the analysis in terms of age of the respondents indicated that most of respondents ages over 40 years old with the figure of 183, representing 37.88%, whereas 130 respondents aged between 25-30 years old, representing 26.92%. The respondents whose age are under the age of 25, are 100, representing 20.70%, the number of respondents aged 31-35 years old are 50, representing 10.35 %, and respondents aged between 36-40 years old are 20, or 4.14%. In the aspect of the educational level, the research findings revealed that with the sample group of 483 participants, 240 participants graduated below secondary school, accounted for 49.69 %, whereas 150 participants graduated secondary school, accounting for 31.05 percent. There were 30 participants who earned bachelor's degree, accounted for 6.21%, 50 participants earned master's degree, accounted for 6.21 %, while 13 participants who graduated higher than master's degree, accounted for 2.69 %.

Drawing upon the sample size of 483 participants who took part in the research assessment, the analysis finding showed that 350 of participants are merchants, equivalent to 97.46 %, 83 participants have an occupation of business owner, equivalent to 17.18 %, while 50 participants working as government officers, equivalent to 10.35 %.

From Table 1: In summary, the findings of the analysis for the application of the imprint concept on 3 types of pottery products namely office desk ornament products, home decoration products, lamps and jewelry products indicated that the technique of rolling patterns onto the clay to design a home spa product and the techniques of painting patterns on beads to design jewelry products had the mean of 4.80, whereas the standard deviation of 0.40 was at the highest level. Furthermore, the technique of rolling pattern onto the clay to design a lamp product had the mean of 4.38 whilst the standard deviation of 0.00 was at a high level. Finally, the technique of rolling patterns onto the clay to design office desk ornament products had the mean of 4.26, whereas the standard deviation of 0.46 was at a high level.

Conclusions

1. By collecting knowledge about the study field area, way of life, patterns, wisdom, and the conspicuous features of Udon Thani Province's terrain, the research findings indicated that data on physical and community features, Udon Thani Province, its topography is generally an upland plateau

which is approximately 187 meters above sea level. The landscape slopes into the Mekong River in Nong Khai Province, surrounded with rice fields, forests and mountains. Most of the area is covered with sandy soil and laterite soil. With the bottom layer is covered with shale soil, it does not store water or hold water in the dry season. Some areas are saline soil which show lower agricultural productivity, whereas some areas are undulating with scattered flat areas. The landscape of the western area consists of contiguous mountains and forests.

2. According to both traditional and modern study data on pottery patterns, Udon Thani Province, the research findings also showed that the lifestyle of the new generation positively responds to the needs of tourists and value addition technique through technological knowledge and innovation to achieve higher quality and valuable products with the deployment of innovation of creative wisdom based on the King's Science". Udon Thani Province is the territory that is Thailand today, showed that imprints for evolution of humans who have lived for as long as other sources of the world, probably as long as five hundred thousand years. As evidenced by the excavations of archaeologists, both Thai and foreigners who have already found especially the territories in the northeastern region of Thailand, the sources of human evolution can be confirmed. Because it is a source of archaeological excavations that are very important to the history of mankind, the important excavation sites where the Archaeologists and the office of Archeology, the Fine Arts Department have been excavated in the northeast of Thailand which is widely recognized by international archaeologists as a source of high cultural prosperity since prehistoric times. The high cultural prosperity includes the excavation at Ban Non Nok Tha, Na Di Subdistrict, Phu Wiang District, Khon Kaen Province and at Ban Chiang Ban Chiang Subdistrict, Nong Han District, Udon Thani Province especially the excavation at Ban Chiang, a famous archaeological site throughout the world. The research of Wilpha Kaswiset (2010) found that the production process of Ban Chiang pottery maintained the traditional production patterns and classification of Ban Chiang art patterns, including bringing each type of pattern to develop according to the pattern design principle. The developed pattern sample was applied as a decorative pattern in other works and products in order to create extensive inspiration to apply the ancient patterns of Thailand in various design works. Alternatively, it can inspire to create a contemporary Thai pattern set which is also a product that meets the market demand.

3. The research findings revealed that prehistoric pottery making consists of making clay into strips and then laying coils in a circle on the clay to form a flat sheet. Then a method of forging with wood and stone is employed to form a container. The flat sheet is paddled into the bottom part of the container and the coiled part is paddled into the body or the upper container and lip of the container. Later clay is molded into lumps and placed on top of a flat clay plate, then pinched pots the lump of clay to make the inside hollow into a cylindrical shape. it is then paddled with "Hin du" stones and patterned wood to mold it into a container. The flat sheet will be paddled into the base of the container and the clod of earth will be molded to become the body or the upper container and the lip of the container. After molding process is completed, it is fired by the outdoor firing method or pit firing which uses a temperature of 500-700 degrees Celsius. Patterns of pottery in Udon Thani Province comprises of a scratch pattern and painted in gray – brown. Later, the red paint pattern was created which the color used for painting is called earthy color. The pottery consists of ingredients to create long lasting features. However, it has not yet been proven that humans painted these patterns with any

kind of tool, but the line of red clay pattern has a moderate thickness that moves in consistent with the ceramic shape which is in accordance with the findings of the study of Kaswiset (2010). The study explored the outstanding characteristics of Ban Chiang pottery patterns by collecting all data from documents and field visits, it was found that the uniqueness of Ban Chiang art works is red painted pottery with curved pattern full of delicate and sophisticated quality representing the movement. The patterns are categorized into natural patterns, geometric patterns and free form patterns.

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Annex

Table 1. Analysis results of the respondents who undertook the research assessment. The perceptions on creative products innovation inspired by design and development based on the concept of cultural imprints was to increase the level of competitiveness, Udon Thani Province. The analysis results are classified by gender, age, education level and occupation.

Demographic Characteristics of the respondents who completed the assessment form	Quantity (Persons)	Percentage
1. The gender of the respondents		
Male	243	50.31
Female	240	49.69
Total	483	100
2. Age of the respondents		
Below 25 years old	130	26.92
25-30 years old	50	10.35

Demographic Characteristics of the respondents who completed the assessment form	Quantity (Persons)	Percentage
36-40 years old	20	4.14
Over 40 years old	183	37.88
Total	483	100
3. Education level of the respondents	240	49.69
Under Secondary school	150	31.05
Secondary school	30	6.21
Bachelor's degree	50	6.21
Master's degree	13	2.69
Higher than Master's degree		
Total	483	100
4. Occupation of the respondents	350	72.46
Merchant	50	10.35
Government officer	83	17.18
Business owner		
Total	483	100
5 Products which respondents require	250	51.75
Home spa products and home decorative products	90	18.63
Office Desk Ornament Products	12	2.48
Bathroom products	131	27.12
Jewelry products		
Total	483	100

Table 2. The findings of the analysis of Ban Chiang souvenir product design leading to implementation, N equals to 3 (Design expert)








No.	Items	\bar{x}	S.D.	Level
1.	Usage of the technique of rolling patterns onto the clay to design a home spa product 	4.80	0.40	The highest
2.	Usage of the technique of rolling patterns onto the clay to design a lamp product 	4.34	0.60	High
3.	Usage of the technique of rolling patterns on the clay to design products for office desk ornaments 	4.26	0.46	High
4.	Usage of techniques to paint patterns on beads to design jewelry products 	4.80	0.40.	The highest

Table 3. The findings of the analysis of Ban Chiang souvenir product design leading to implementation, N equals to 3 (Pottery Design expert)

No.	Items	\bar{X}	S.D.	Level
1.	Using the technique of rolling patterns onto the clay to design a home spa product 	4.33	0.57	High
2.	Using the technique of rolling patterns onto the clay to design a lamp product 	4.00	1.00	High
3.	Using the technique of rolling patterns on the clay to design products for office desk ornaments 	4.66	0.57	The highest
4.	Using technique to paint patterns on beads to design jewelry products	4.66	0.57	The highest


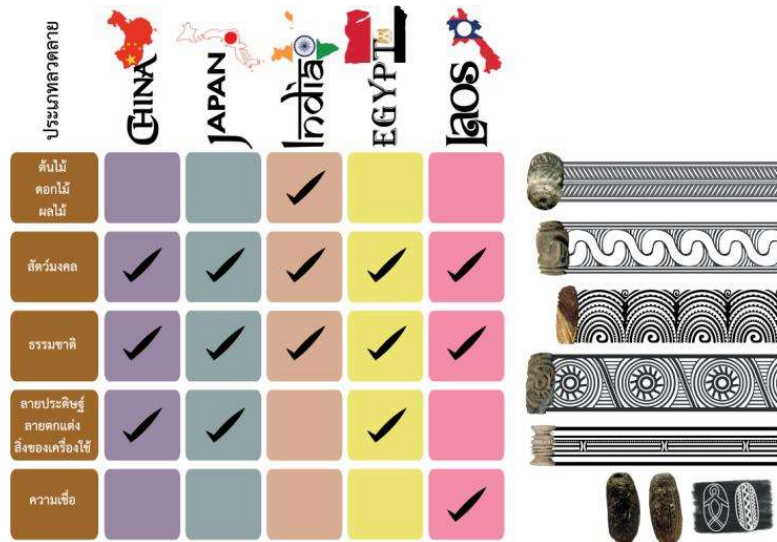
No.	Items	\bar{X}	S.D.	Level
				

Figure 1. Ban Chiang pottery pattern stamp with 5 types of popular auspicious patterns



Source: Khanittha Ruangwannasak

Figure 2. Pottery products (idea sketched)



Source: Rosjana Chandhasa

Figure 3. Using the technique of rolling patterns onto the clay to design a home spa product.



Source: Rosjana Chandhasa

Figure 4. Using the technique of rolling patterns on the clay to design a tableware product.



Source: Rosjana Chandhasa

Figure 5. Using the technique of rolling patterns onto the clay to design a lamp product.



Source: Rosjana Chandhasa

Figure 6. Using the technique of painting patterns on beads to design jewelry products



Source: Rosjana Chandhasa