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## DESIGN AND DEVELOPMENT OF BANANA FIBER TEXTILES WITH GRAPHIC PRINTING AND DECORATION NANO INNOVATION TO THE ECONOMIC COMMUNITIES COMMERCIAL

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## Abstract

*This research is design and development of banana fiber textiles with graphic printing and decoration Nano innovation to the Economic Communities Commercial. The results found that Innovative Nano-fiber cloth decorated banana fabric can be antibacterial at 99.95% and staphylococcus bacteria klebsiella pneumonia at 99.93% and water reflection level of 80 percent age, which can be absorbed into the cloth and wet it a bit. The mostly respondents were All have been satisfied at maximum average and highest level of satisfaction that with an average at 4.91 and 98.24 percentage, satisfaction is at the highest level. Execution Technology, the workshop schedule for the two days' workshop on 17 - 18 September 2559 at the Chedi district office in Suphanburi province, 25 people. Most of the participants were satisfied with the level, in Graphics and decorative nanotechnology innovation, most every question.*

### Keywords

Products Design, Graphic Printing, Banana Fabric, Nano Innovation, Communities Commercial

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## 1. Introduction

Project Research, Design and development of banana fiber textiles with graphic printing and decoration Nano innovation to the Economic Communities Commercial. Researchers have the intention of bringing the fabric from this banana fiber into the design and development of a product that is more special than the typical design. Modern graphic designs are printed with specialized printers in a modern graphic format. By designing and developing graphic styles to be current fashionable. The design relationship is leave out of the applied arts, particularly from the arts. (Sathaporn, 2007). To promote the image and make the appearance of the natural fibers to be more attractive colors. This is a great way to promote your products to a wide range of buyers every day (Thai Graphic Designers Association (ThaiGa))[n.d]. In addition, the product of industry are omnipresent; at home, in the street, they form the man-made landscape of our lives. (Heskett, 1993),

In this research we focus exclusively on graphic design on the product only to be in line with the topic and purpose of the research, in order to link with the design of the product. In this research, industry and researchers had the idea to integrate nanotechnology into the mix in order

to solve the woven fabric to mold or moisture that often occurs with fabrics from natural fabric and to add value to their products as well. (Bunpord, 2011) The objectives of the study were as follows.

- To study of characteristics physical of Banana fabric, Nano technology and Graphic design on products
- To study graphic design and printing process on fabrics from Banana fabric and produce prototype products
- Data analysis of user evaluation of the products and Transfer knowledge the community and evaluate the satisfaction of the participants

## 2. Methods

**2.1 Investigation about type of Bags** in the shopping area and store and check samples of women's bag products available on the market.

### 2.2 Graphic Design Process and Printing Process on Banana fabric

- To study of characteristics physical of Banana fabric, Nano technology and Graphic design on products

The research of banana tree processing using banana. The fiber is stickier than other types of banana. (Yongyuth,2015) Banana fiber is a cellulose fiber which was from banana trunk according to Bussara, (2007). It can be make the yarn but in the same time it had to use with another fiber such as Cotton fiber as well.

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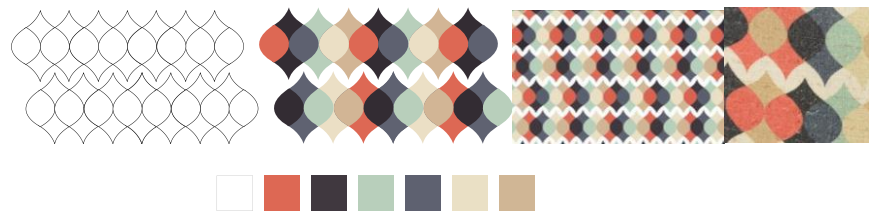


Figure 1: PANTONE Color trends for 2017

Sourcing: <https://www.pantone.com/fashion-color-report-fall-2017>

### 2.3 Printed Pattern Design and Drafting Prototyping Pattern

First of all, this research used color trends 2017 (Laurie, 2017). Graphic pattern Sketching and adding sublimation or transfer printing requires sublimation ink, which is a synthetic ink. It is well absorbed in polyester fabric such as TC (polyester) and TK (polyester 100%). The sublimation ink can be absorbed by a natural fabric for printing. The pattern design shows the feeling of rhythm; curve, color and shape (Siripun, 2003). To strengthen the identification of objects by stimulus size, brightness, color, shape, number, and direction ... and so on. (Yi-Lin Lo, 2010).



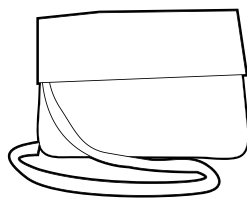
**Figure 2:** *Graphic designs for printing and prototyping pattern on banana fabric*

### 2.4 Bag Design Process from Banana Fabric

In the shopping area was survey samples. The sample was collected and designed, and then selected by the experts, the possible way to enter the production process and there are five ways to add value to banana fibers: four graphic of women's handbags (shoulder bag, Backpack, Shoulder Bag and handbags) and 1 suitcase. Normally, the product in the market area is suitable for every customer such as age, gender and income. (Ponsanong, 2002)



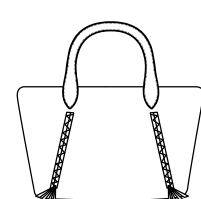
**Bag Design Form 1**



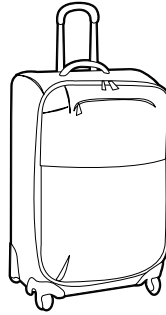
**Bag Design Form 2**



**Bag Design Form 3**



**Bag Design Form 4**



**Bag Design Form 5**

**Figure 3:** Five styles bag design sketching selected

## 2.5 Finishing Process Banana Fabric with Nano Innovation

In this research used Banana fabric and printed graphics on it and adding nanotechnology to help prevent bacteria. (Anti-Bacterial) and water reflection before being produced as a ladies handbag. Type of weaving machine is table weaving machine. Its size is 80x60 cm. square, made of wood and consisting of plastic seals. It can split the yarn into two sets, width of fabric can be woven up to 60 centimeters. The characteristic used in weaving is flat polyester yarns and difference color.

## 2.6 Data Analysis

The researcher collected the data to verify the completeness. Accuracy of data and coding information in mean and percentages as follows:

- Part 1 analyze the general data of the respondents in mean and percentage (Ponsanong, 2002)
- Part 2 analyze the data from the participated satisfaction assessment on training courses in designing and developing banana fiber fabrics with graphic printing and Nano innovation for towards economic community development
- Part 3 for transfer knowledge the design of products from Banana Fabric with graphic printing and Nano technology fabrics towards economic community development. The workshop schedule of execution Technology for the two days. There are 25 participants including community enterprise and on 17 - 18 September 2016 at the Chedi district office in Suphanburi province. Various women's groups and interested parties within the surrounding area. Most of the participants were satisfied with the level in every question.

### 3. Result

#### 3.1 Create Prototype Products

To begin with this research would design in illustratesymbolin based mainly on the measured confusions between symbols, proposals for the redesign of symbols can be formulated. (H.J. Zwaga and T. Boersema, 1983) but after brainstormed the ideas which have to use in graphic trend and used color trends 2017 from drafts designed and selected. It is used as a prototype product. Using Banana fabric printed graphics decorated with Nano innovation.

##### 3.1.1 Fabric for Prototype Production

Innovative Nano-fiber on Banana fabric can be anti-bacterial at %99.95 and *staphylococcus bacteria* *klebsiella pneumonia* at %99.93 and water reflection / water level of 80 percentages, which can be absorbed into the cloth and wet it a bit.



Figure 4: Banana Fabric Decorated with Nano Innovation

##### 3.1.2 Five Prototype of Banana Fabrics Printing Women's Bags and 1 Suitcase (Shoulder Bag Backpack Shoulder Bag and Handbags)



Shoulder bag

Backpack



Handbags / Shoulder bags



Clutch bag



Suitcase

Figure 5: Banana Fabrics Prototype

### 3.2 Consumer Satisfaction Survey of Banana Fabric's User

• The mostly respondents were female, aged 21-25 years, earn less than 15,000 baht. All have been satisfied at maximum average and highest level of satisfaction that with an average 4.91, percentage on 98.24.

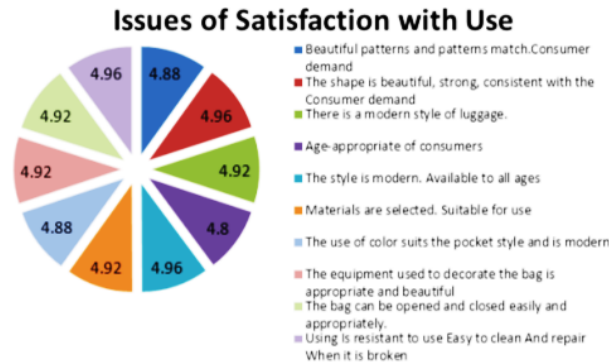


Figure 6: Consumer Satisfaction Survey

### 3.3 The workshop schedule of execution Technology for the two days

• There are 25 participants including community enterprise and on 17 - 18 September 2016 at the Chedi district office in Suphanburi province. Various women's groups and interested parties within the surrounding area. Most of the participants were satisfied with the level in every question.



Figure 7: Slipknot Bag Sketch for Transfer to Community



Figure 8: Lectures Provide Knowledge about Research and Let Participants Participate in the Printing Fabric and the Sewing Slipknot Bag Practical Training and their Products

• Technology transfer activities on September 18 - 17, 2016 .The training was divided into 5 groups. When the training was completed, the participants' satisfaction with training was assessed. Using questionnaires to evaluate. The results was separated 2 parts. First, part1 the most of the participants were female and aged 40-31 years old. Have a career as a farmer and most of them do not have income or earn 10,000-5,001 baht.Part2 asks the satisfaction of the trainees. It is a question that asks about satisfaction with the curriculum. It is divided into 3 aspects: the objectives of the project. Curriculum structure and the content of the course. It was found that most of the samples were most satisfied average all at 4.85 and in percentage at 96.94

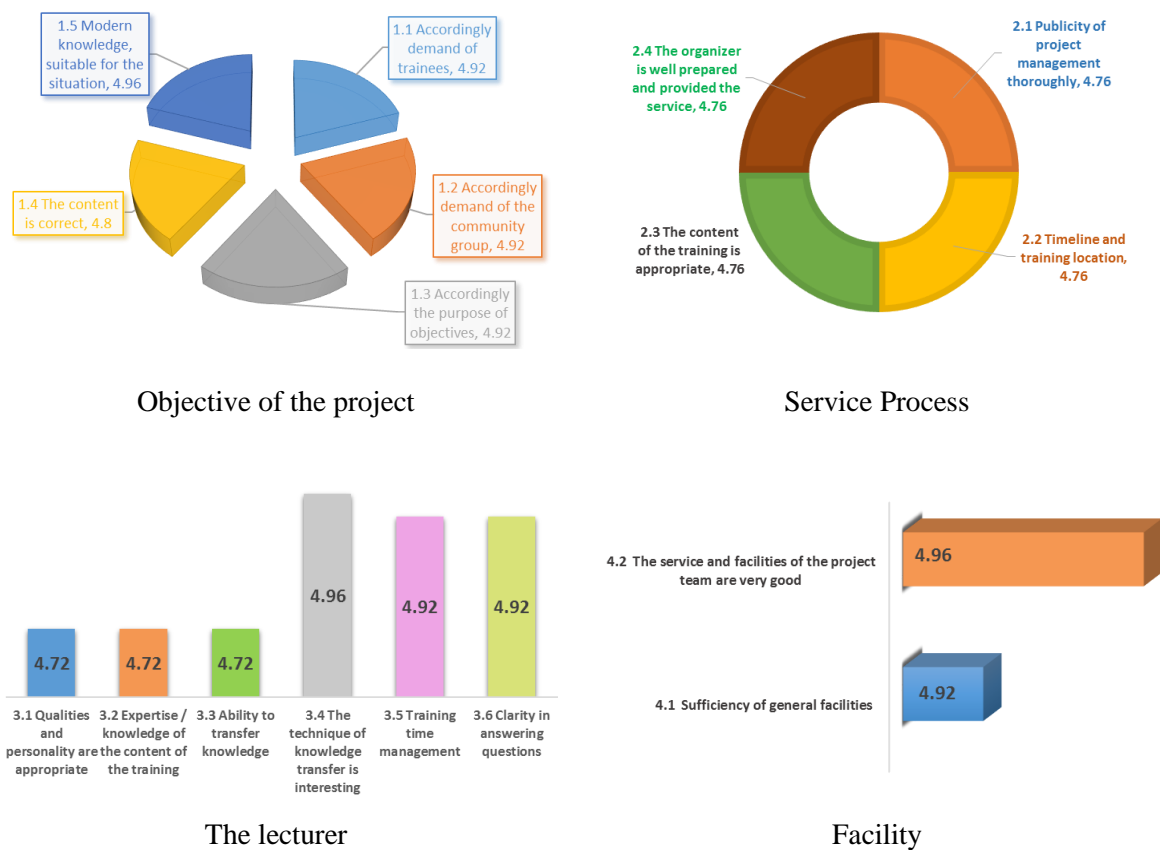


Figure 9: Assessment on Training Courses: Average and Satisfaction Levels

#### 4. Conclusion

• Based on this research, the innovative banana fabric was coated with nanoparticles. To antibacterial (Anti-bacterial) and water repellent (water repellent) that inhibits the bacteria *Staphylococcus* at %99.95and *klebsiella pneumonia* at %99.93and the water / water reflector can



reflect water at 80percent. The test area is wet, the water can be seep into the fabric a little and the fabric is slightly damp. Moreover, it can absorb water and moisture well.

- Based on the study, the bags which their pattern is modern and stylish, suitable for ages of consumers. The material is selected suitable for using. The color is appropriate the bag style and device that is decorated bag is appropriate and beautiful. It can be use easily; easy to clean and repair when it is broken. Bloch, Peter H (1995) according to the physical form or design of the product is an unquestioned determinates of its marketplaces success. According to Lulus Panero & Martin Zelnik (1979), due to the significant variation in individual body sizes, average, are obviously of little use to the designer and it is necessary instead of the deal with range.

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## 5. Acknowledgment

Research on the design and development of banana fiber fabrics with graphical printing and Nano innovation towards Economic Community Development. It can be successfully with the kind support of the Rajamangala University of Technology Phra Nakhon, which has endorsed the evaluation of research proposals, offer the fiscal year 2016 and we're great to THANK YOU Rajamangala University of Technology Phra Nakhon for providing the opportunity and funding of this research to the research's team. Include participants in technology transfer activities from Chedi district, U Thong district, Suphanburi province. Thank you to all of our research team who are dedicated to working hard and working to resolve all the problems and obstacles that arise during the research process. The benefits of this research are to strengthen the community. It stimulates the economy as a whole. The results of this research may be Creating a community product is another way.

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