

# The Need of Informatics Technology in Presenting Information of Craft Industry as A Creative Economy Potential

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**Abstract**—Today, it is easy to handle the restrictiveness of society to search any typical craft of a region through the various development of information technology. A *Location Based-Geographic Information System* displays any information and the uniqueness of the craft based on the location where the product be made. The use of a multimedia website technology supported by a more attractive appearance, customers can clearly visualize the location as well as the potential of the handicraft. Thus, it will increase the sale value of the products. Each region generally has a potential superior craft that can be raised and developed. The things that make local products to be a potential product to be developed are such the uniqueness, the distinctiveness, the creativeness of the craft-maker, and the help of technology touch. Therefore, it is expected that the sell of local craft products can increase the revenue of the region. (Abstract)

**Keywords** — *Crafts, Information, Information Technology, Geographic Information Systems, Web-Based, Creative Economy*

## 1. INTRODUCTION

The Craft industries have a major contribution to the Indonesian economy. However, these contributions are not supported by a good growth of the industries. This decrease indicates that the performance is not optimal. If this situation continues, then the craft industry, which has contributed greatly to the economy of the longer, sinks. This condition would be detrimental to Indonesia as a whole. Circumstances that could harm reduction among other jobs that means more unemployment.

Developing a creative economy based on local wisdom and culture is an alternative solution to stimulate creative economic development to be independent and able to develop the business, especially in the area. In general, each region has the potential of superior craft products that can be increased and developed. The uniqueness or distinctiveness of local craft products must be core elements of creative artisans then added by a touch of information technology will be able to make a local craft products into the potential to be developed that is expected to increase the revenue of the area.

Today, through the development of information technology, the limitations of diverse communities in the

search for typical craft products of a region can be easily overcome. The form of search to get information of handicraft products is information technology. If it is supported by the existence of websites with multimedia look designed attractively, visualizing the location of craftsmen in the form of digital maps as well as the potential of the craft will be more affordable. Therefore, the products value can be further increased. This is expected to affect the particular areas of the involved craftsmen, craft-buyers or local government in the form of social life. This can be seen from increase of the craftsmen income and the more raising of business climate. In addition, there will be more interest in a craft product. Thus, those increases will be very significant in improving the economics of the region and it definitely will affect the region to become a potential area.

Mari Elka Pangestu, the Trade Minister, said that the contribution of the creative economy (among other craft products) approximately amounts 4.75% for the GDP in 2006 (about 170 trillion Rupiah) and 7% of the export in 2006. The growth of the creative economy reached 7.3% in 2006, as it is higher than the national growth that amounts 5.6%. The economic sector is also able to absorb approximately 3.7 million workers that equals to 4.7% of the total new employment. One

of the major contributors is from the craft industry, which contributes 18.38%.

In the Creative Economic Development Convention in 2009-2015, Dr. Mari Elka Pangestu said that there were some reasons for developing the creative industries; among others:

- a. to give significant economic contribution
- b. to create a positive business climate
- c. to build the national image and identity
- d. to make a renewable resources based
- e. to create an innovation and creativity to be a competitive advantage of a nation
- f. to provide a positive social impact.

The other reason of developing the creative industries is that there is a positive impact that will affect the social life, to business climate, and to the economic improvement. It also affects the image of the involved region.

## 2. PROBLEM FORMULATION

## 5. LITERATURE REVIEW

In this research, the problems that will be discussed are as follows:

1. How can information technology help people who are interested in viewing any craft products of a region as well as the location of the craftsmen by digital maps?
2. How can information technology make a local crafts to be an effort to improve social life, business climate, economic improvement, and how can it affect the image of the region?

## 3. RESEARCH OBJECTIVES

The purpose of this research are:

- a. To design and build a webbased-software that provides the information of handicraft product;
- b. To increase the knowledge of the craftsmen for using the information technology as a tool of introducing their craft products;
- c. To gain an overview of the location of the artisans in the form of a map of a region that can be easily traced by the customers of handicraft products;
- d. And to get the final conclusion and the analysis of the webbased-software development of craft products that will be able to build the economic climate and build the image of a region.

## 4. METHODS OF RESEARCH

### 4.1. The Object of the Research

The objects of this research are such as the location of the craft, the craftsmen, the products and the production centers in Bekasi, one of the regions/districts in the province of West Java, which has the potential of craft creative industries. The researchers gained the data of the location of craftsmen, the craftsmen and the products as well as production centers to be a digital database. The description of craft products can be viewed in the figures.

### 4.2. The Subject of the Research

The subject of this research is an information technology in the form of WebGIS, which provides the needs of the craft customers, the local officers and other relevant parties in terms of getting any information easily and informatively.

### 4.3. The procedures of the Research

The steps of this research can be seen in figure 1.

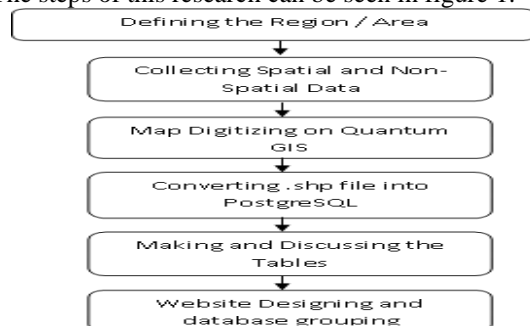


Figure 1. The stages of research in making WebGIS of craft.

### 5.1. The potential of the Creative Economy

Today's, craft product is one of the superior products that can also be called as an excellent product in the creative industries for SMEs in small areas. There are some of the major issues facing the creative industries for the development of the craft approximately until the year of 2015. The first is the quality and quantity of human resources who work in the creative industry. Secondly, the climate is conducive to start and run a business in the field of creative industries. The third issue is the low appreciation for the creative workers and their works. The fourth issue, there is a slow access to obtain information from communication technology. The fifth, there is a weakness in the financial institutions, which support the efforts of creative workers (Micro Finance Institutions of Syariah ([www.tamzis.com](http://www.tamzis.com))).

Indonesia has a very large potential for the development of the creative economy, the diversity of cultural elements and the characteristics of the community. They are the strong values that Indonesia has had from long time ago, which can be managed to gain additional values for the economic field as a new economic power. The rate of growth of the creative economy in Indonesia continues to increase. In addition, the development is higher than the national growth rate. Based on the statistics of the creative economy issued by the Central Bureau of Statistics (BPS), the growth rate of the creative economy in 2013 reached 5.76% and the national growth rate approximately reached 5.74%. This sector could absorb labor, which reached 11.872 % out of the national employment number. Business prospects of the creative economy in Indonesia also shows the more promising developments. It is estimated that the turnover of the creative economy in Indonesia reach 600 trillion Rupiah. This year, the increase of creative economy in Indonesia grown by an average more 10% than that was in 2012, which reached only 530 trillion Rupiah. The contribution of the creative economic reaches 7% of the total GDP of Indonesia.

There are three leading sectors in the field of creative industries such as culinary, fashion, and crafts are the greatest contributor to the Gross Domestic Product (GDP). These sectors will certainly sustain the higher in Indonesian's economy. In the context of the development of the creative economy in the cities of Indonesia, the creative industries potentially grow in large cities or in well-known towns. This occurs related to the availability of qualified human resources as well as the network marketing that is better than in of the small towns. Nevertheless, there is still the possibility of small towns in Indonesia to develop the creative economy. For small towns, they can use city's landmarks or the social events ie. the festival venue as the development strategies of creative economic to introduce the typical regional products (Susan, 2004).

### 5.2. Potential Development Areas of Craft Industry in West Java.

Related to the West Java Provincial Regulation No. 22 in 2010 on Regional Spatial Planning (*Rencana Tata Ruang Wilayah*) of West Java Province periode 2009-2029, the region of West Java province is divided into six (6) Regional



importance, is greater than it has been at any time in the last 70 years or so.” It is stated clearly that we are in the era of the development of information technology can accelerate the development of productivity methods for the people who run the SMEs. They are also required to be able to do a resume and continue to upgrade the role of adjustments in the use of technology. The other important thing as also stated by Jovanic (2001) that SMEs should strive to improve the application of information technology method, such as e-mail and the internet, to enhance the ability to run business.

#### 5.4. Geographical Information Systems

Geographic Information System (GIS) is a kind of information system designed to work with a spatial-oriented data or a geographic-coordinated data. GIS is a computer-based information system that combines elements of the map (geographically) and the information about the map (data attributes) that are designed to obtain, process, manipulate, analyze, and display spatial data modeling to complete the planning, to process the manipulate data, and to investigate the problems gained (Mufidah 2006 ). There are 2 kinds of geospatial data processed in GIS namely spasial and non-spatial data. The emphasis on GIS is a spatial data display. Spatial data is a data related to a geographic condition.

#### 5.5. The Data of Geography

Geographic data includes spatial data and attribute data. Spatial data relates to the location, shape and relationships with other objects. Attribute data describes the properties of the spatial data. Data for GIS can be derived from topographic maps, thematic maps, aerial photographs, the measurement data with a global positioning system (GPS), satellite imagery, radar imagery, and so on. In addition, to the circumstances in the real world can change at any time. Thus, the data taken from field surveys can also be used as a data source.

Spatial data is needed in times of representing or analyzing a variety of information related to the real world. The data is gained from the real world as much as possible can explain the variation of the phenomenon as well as the location of it. It is not possible to gain all the data from the this large real world as a whole into a spatial data. Thus, the spatial data is a simple overview of the actual real world.

There are various ways to gain data acquisition. One of the most well known is by digitization. The digitization process will change the object points, lines, or polygons analogous to a form of hard copies into digital vector data. In the early development of the geographic information system, it motsly used a table of digitization known as digitizing tablets. The analog maps that will be will digitized was placed on the digitizing table. A cross sign on a table pointer is used to guide a direct digitization.

#### 5.6. WebGIS

WebGIS is the application of Geographic Information System (GIS) that can be accessed online via the internet/web. In the configuration of WebGIS, there is a server, which functions as a MapServer. It processes the map request for the client and then sends it back to the client. In this case, the user/client does not need to have GIS software.

He can only use the internet browser such as Internet Explorer, Mozilla Fire Fox, or Google Chrome to access GIS information on the server. In the future development, the use of WebGIS applications will more increasingly widespread because it has several advantages. The advantages are as follows:

1. It can broadly reach users around the world with with a low cost.
2. It can present an interactive map as well as using a desktop GIS software.
3. It does not depend on the operating system so that it can be operated on all computers of different operating systems.
4. It does not need a special *software* and *tool* in the operation because basically all you need is a browser that can be obtained free of charge.
5. It has a capability of process that is equivalent to a developed *user interface* without a web-based.
6. If it is needed, it can be designed as an *on-line system* that can be accessed by all users who have internet connection.

The services of GIS web-based have added a new dimension to the works using GIS. GIS Web has made easily an application to share spatial data via the *World Wide Web*. Users in entire of the world can access the data then without having a special GIS software loaded on the machine. GIS Web has the potential to revolutionize its method that can be developed, accessed and used throughout the world. The illustrations of WebGIS services can be seen in Figure 3 below:



Figure 3. The of Illustration of WebGIS service.

(source:<http://schnellinformatics.com/webgisServices>.)

*GIS Web* generally uses a 3-tier architecture. This makes it possible to access the attribute data along with the spatial data via internet. It allows users to access GIS data and functionality via website and to integrate them with their own systems and applications without any development or without the host of specific tools of GIS tools and the data sets themselves.

*GIS Web* has already helped to create a platform of independent distribution channel for the GIS data. This

application can share the data from different and format data sources. It can also combine them into one application without obviously known that the data are form a different source or location.

## 6 RESULTS AND IMPLEMENTATION

### 6.1. Map Digitizing Process

The steps to collect the research data, presented in Figure 4 below, are as follows; (1) The collection of data uses a survey (photo, GPS, browsing, analog map); (2) Analysis of the data uses a digitization process (3) Data is processed by using Quantum GIS software (4). The form is a digital database (*digital map*).

In this step, there will layers made that will be needed in *Quantum GIS*. The technique used is digitation that requires a computer process. The files, stored in a computer of digitized maps, were classified based on the *layers* corresponding to each type. The line-layer type is used in designing digital-streets data. The polygon-layer type is used for the date of sub-district. Line-layer type is used to provide point labels for each place where the craft made.

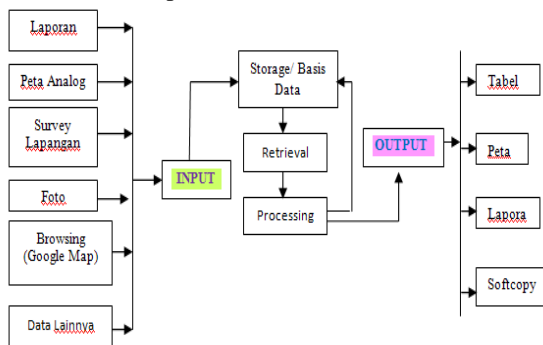


Figure 4. The Technique of Collecting Field Data.

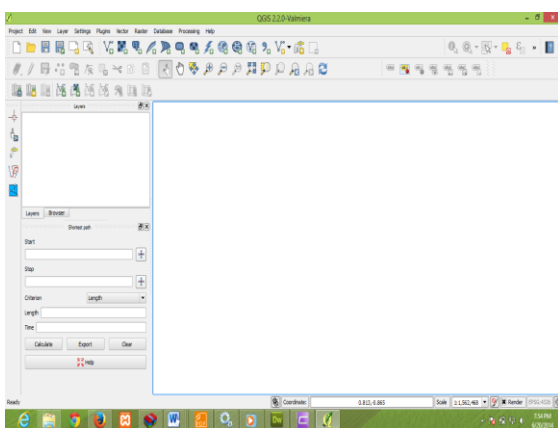


Figure 5. The Initial View of Quantum GIS 2.2.0

The process of digitizing on Quantum GIS can be seen in Figure 5 above. The example uses the distric with a polygon layer. Enter raster-layer, in the form of \* .JPG extension, to perform digitization of the districts using polygon layer. Then, select *new vector layer* on the toolbar (or *press the letter N*), as shown in Figure 6 below. After that, select the *Type = Polygon*. The *Attributes* section is optional. This section can be filled directly on the Quantum GIS or on the PostgreSQL. After that, click OK.

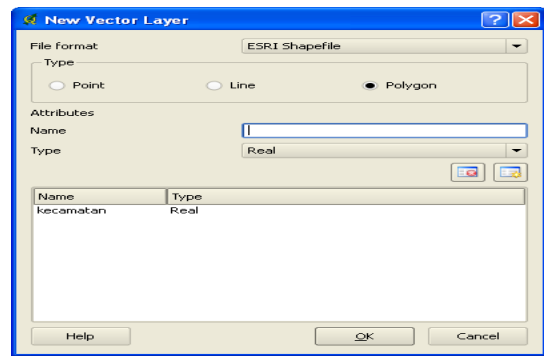


Figure 6. The New Vector Layer Display

Sign in to digital process. Select *toggle editing* that functions to activate the *tools* used in digital process. Then select *Capture Polygon* that functions to select the sub-districts names in Bekasi. Then, click right button until to open the used attribute values and the contents of the values. The results of the process above can be seen in figure 7 below.

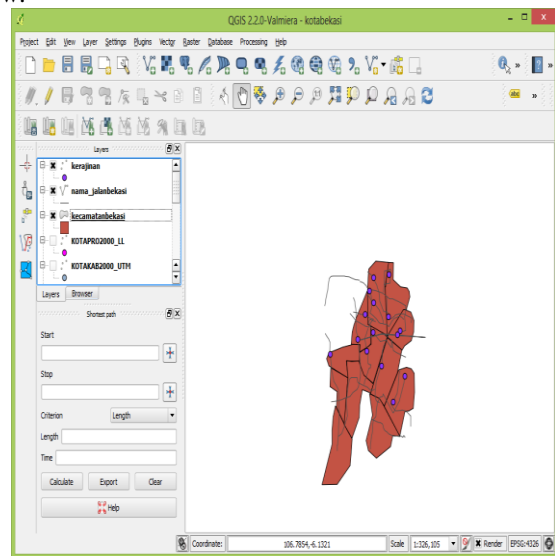


Figure 7. The Result of Digitized-District.

### Conversion Layer (shp files) Being Table on PostgreSQL

At this step, there will be a conversion of *.shp files* into tabular form in PostgreSQL by using the *fasilitas tools import shapefile to PostgreSQL* on QuantumGIS. The display of this process can be seen in Figure 8 below:

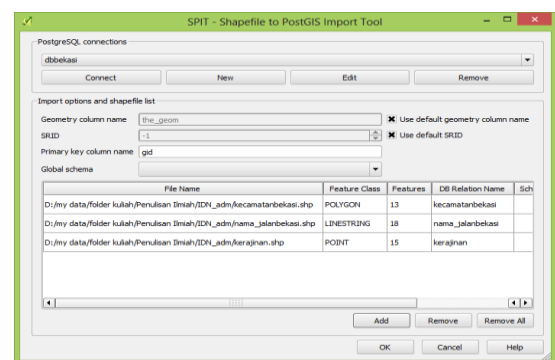


Figure 8. The Display of Conversion from .shp file into PostgreSQL

### The Creation and Discussion of Tables in the Database

Before getting into the step of creating GIS website, it is necessary for making tables in order to bank the data that will be recorded. This is the explanation of tables available in the database (*dbbekasi*) which the researchers have previously designed in *pgAdmin III* such as the table of conversion results as well as the the default tables of the database. The descriptions of these tables are as follows:

#### • Table of Bekasi District

**Table of Bekasi District** is the import result of *import shapefile to PostgreSQL* that utilizes the tool on QuantumGIS of digitized-layer process. This is initially a *.shp file* of *polygon-layer* type (*polyline*). This table describes Bekasi areas and serves to provide information about the names of the District in Bekasi.

#### • Table of Street's Names in Bekasi

**Table of Street's Names** is the result of *import shapefile to PostgreSQL* that utilizes the tool on QuantumGIS of digitized-layer process. This is initially as a *shp file* of *line-layer* type. This table describes the the road shapes in Bekasi.

#### • Table of Crafts

This table contains the headline of Craft WebGIS application. The records of this table will be in the form of input or inserted from the page of admin. The contents of this table can also be modified and deleted through the administrator form that is available in the application of WebGIS Crafts. This table is a result of *import shapefile to PostgreSQL*, which means utilizing tools on QuantumGIS of digitized-layer process. This is initially as a *shp file* of *point-layer* type. This table contains the dots or the names of the crafts that are available in Bekasi. It also provides information about the name of the handicraft business, the address, names of the item, the images, the prices and phone numbers located in Bekasi. All the information provided here are very useful.

#### • Table of Items

Table of Items is a table created in *pgAdmin III*. This table's records will be typed or inserted from the *administrator form*. The contents of this table can also be modified and deleted through the the page of admin that is available in the application of WebGIS Crafts. This table contains information concerning the description of items that are available at Crafts of Bekasi.

#### • Table of Admin

Table of Admin functions to bank the *user* data for a management system of administrator page. This table consists of a username and password field. The steps to create a Table of Admin are as follows:

- Click on the *Database*, it is named (*dbbekasi*) and click the *schemas, public, and tables*.



- On the toolbar, click the *Execute arbitrary SQL queries* button. There will appear the window of *pgAdmin III Query*. Then, type the command as below:  
**CREATE TABLE "admin"**  
(*name character varying NOT NULL,*  
*pass character varying NOT NULL*)

WITHOUT OIDS;

ALTER TABLE "admin" OWNER TO postgres;

INSERT INTO admin ('username', 'password')

VALUES ('admin', 'password');

- Execution / run the program to using *Execute query* button on the toolbar. Close the page of *pgAdmin III Query*, and then click the *Refresh* button, it will form a table of admin.

### 6.2. Implementation

WebGIS applications using PostGIS connection type and therefore the value of the connection type is PostGIS. Furthermore, make an arrangement to the existing database connection. To set up a connection to a database, enter the appropriate data in the database, such as setting the user, password, host, database name and port used. After making all the folders and object layer objects needed to be displayed and the database connection is successful, then the file folder above we can call or in-the-include file *index.phtml*. Here are some pictures of the display WebGIS craft that have been made.



Figure 9. Bekasi Page

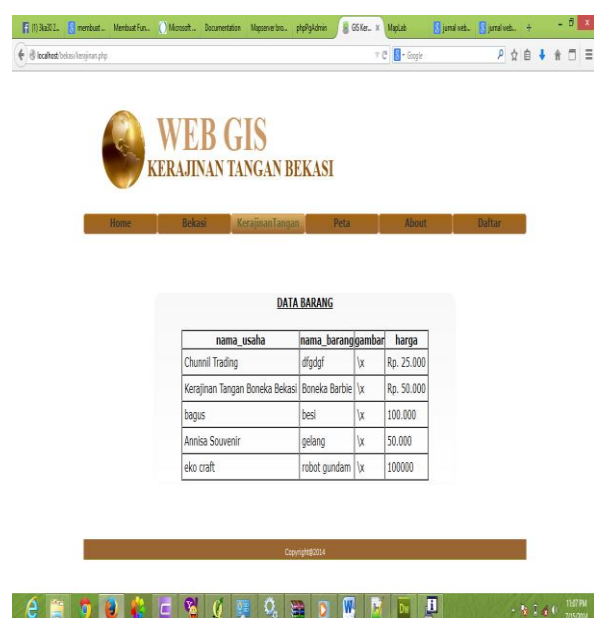


Figure 10. Craft Page

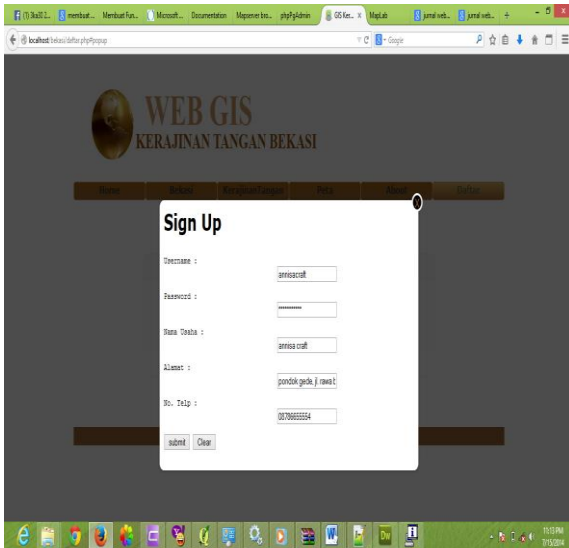


Figure 11. PopUp of Sign Up

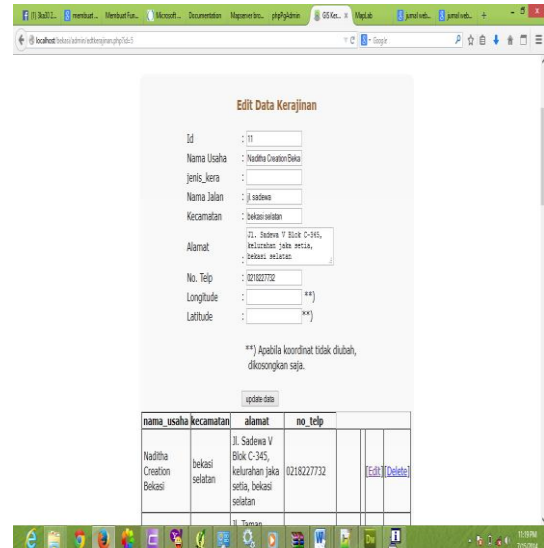


Figure 14. Page of Add Item Data



Figure 12. Pages of Add Craft Data



Figure 13. Page of Add Item Data

### 7. CONCLUSION

This researcher concludes that:

- 1) In the development of industries, a local culture-based industry is not able to develop properly if the craftsmen, craft enthusiasts or the local governments run their business without the involvement of information technology. As the fact, there are many modern tools in delivering information about the superior products of region.
- 2) A web-based information technology can increase significantly the interest of craftsmen, the craft enthusiasts, or the involved local officers. Their results of those increases can be seen on the increase of income of the craftsmen, of the business climate, and of the buyer's interests of the craft products. Therefore, it will significantly increase the economy field and surely will affect the area into a potential area.

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