System Analysis and Design of Android Agriculture SCM

Renan Prasta Jenie Mutiara Rizky Ayu, Raymond Kenny, Ilham Aulia

Abstrak

The purpose of the research is to build a Supply Chain Management (SCM) that can facilitate business activity management between trading partner, from purchasing raw material, and product support for production until delivery of end products to the customer.

The method of research that we use in our research is by literature study which is to find a literature that related with our research and to acquire primary data from sources who know about agriculture.

From the research we have done, we acquire information that the producer have a difficulty to get a big profit because of the distribution system right now is more profitable for the middleman because of big disparity of price. The middleman get the harvest from the producer with lower price from the actual price while the middleman sell it with higher price. Because of that it's very less profitable for the producer.

From that problem, so we suggest that the distribution system of Indonesia agriculture right now should use the SCM concept that's more transparent and not harm others.

I. Introduction

Indonesia known as agriculture country (5), but Indonesia is very dependable on product import for example rice with the amount of 1,2 million ton. (6). The dependency of product import in other countries are very big around 7.729 thousand ton in 2006 (4) (Figure 1.), especially on the agricultural commodity like rice. (5)

Renan Prasta Jenie is with the Bina Nusantara University, Indonesia (phone : 0812 919 3554; email:rjenie@binus.edu).

Kenny S, Raymond is with the Bina Nusantara University (corresponding author to provide phone: 0813-114-26801; e-mail: kenny_leonheart@hotmail.com).

R.A, Mutiara is with the Bina Nusantara University (corresponding author to provide phone: 0857-808-86796; e-mail: chyntia_paris@hotmail.com).

Aulia Malik, Ilham is with the Bina Nusantara University (corresponding author to provide phone: 0896-522-12055; e-mail: hebigami18@gmail.com).

Tabel 1. Negara-negara Importir Pangan Dunia

Rank	Negara	Impor (ribu ton)
1	Mesir	11.930,0
2	Indonesia	7.729,0
3	Maroko	6.571,0
4	Filipina	5.016,5
5	Irak	4.623,0
6	Suriah	3.339,0
7	Bangladesh	2.988,1
8	India	2.078,4
9	China	1.810,0
10	Pakistan	1.518,9

Sumber: FAO (2006), *Crop Prospect and Food Situation*

Figure 1. Tabel Negara Importir Pangan Dunia

That indicates our agriculture is having a problem. First, Indonesia is an archipelago and the amount of the islands in Indonesia more or less around 13.466 islands. (1) This thing make every areas are not producing the same harvest.

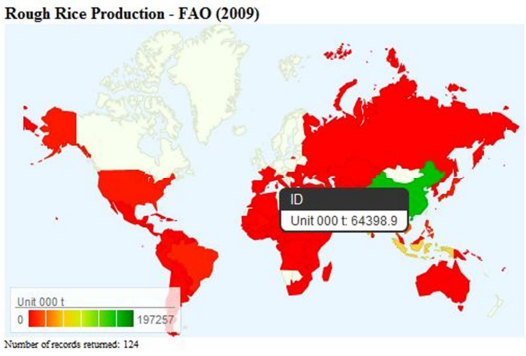

Figure 2. Peta Produksi Hasil Panen

Second, the low quality of human resources that Indonesia has where the level of education in Indonesia only 17,3%. (3)

Tabel 3.1.1. Angka Melek Huruf Penduduk Umur 15 Tahun ke Atas Menurut Provinsi dan Kab/kota
Literacy Rates of Population Aged 15 Years and Above by Province and District

Sumber/Source: SUSENAS 2003, 2004, 2005

Provinsi / Province	2003			2004			
	Laki-laki Male	Perempuan Female	Total Total	Laki-laki Male	Perempuan Female	Total Total	Laki-lak Male
11. Nanggroe Aceh Darussalam	97.97	94.66	96.28	97.77	93.73	95.69	n
12. Sumatera Utara	98.32	95.32	96.80	98.30	95.03	96.64	97.8
13. Sumatera Barat	97.41	93.96	95.60	97.75	93.90	95.73	97.4
14. Riau	97.55	94.61	96.10	97.34	95.46	96.41	98.5
15. Jambi	97.69	92.62	95.17	97.88	93.58	95.76	97.0
16. Sumatera Selatan	97.25	93.13	95.19	97.37	94.00	95.69	97.3
17. Bengkulu	96.18	90.93	93.59	96.96	91.33	94.21	96.2

Figure 3. Tabel Statistik Pendidikan Indonesia

Human resources, in this matter, that is the farmer who doesn't have enough of the knowledge in farming and harvest that they don't have so good planning in farming and harvest that they cannot maximize their earning.

Produsen padi terbesar — 2005 (juta metrik ton)	
Republik Rakyat Cina	185
India	129
Indonesia	54
Bangladesh	40
Vietnam	36
Thailand	27
Myanmar	25
Pakistan	18
Filipina	15
Brasil	13
Jepang	11
Total Dunia	**700**
Sumber: *Organisasi Pangan dan Pertanian (FAO)*[1]	

Figure 4. Tabel Produsen Padi Terbesar

The leading country rice's producer are China (31% from the world's total production), India (20%), and Indonesia (9%) (Figure 4.). But, only few of the world rice production that's being traded between other countries. (only 5%-6% from the world's total production). Thailand are the major rice exporter (26% from the total of rice that's traded in the world) followed by Vietnam (15%) and United States (11%). Indonesia is the world's major importer of rice (14% from the total of rice that's traded in the world) followed by Bangladesh (4%), and Brazil (3%). Indonesia rice production in 2006 is 54 million ton, then in 2007 is 57 million ton (prediction number III), miss from the original target which is 60 million ton because of the drought that happened by ENSO symptoms. (2)

Third, there is a problem for the farmer in obtaining the support product like seed and fertilizer. That makes the schedule of planting and the quality of agriculture product is obstructed.

Fourth, the distribution system of agriculture product in Indonesia doesn't be managed so well and efficiently that makes the prices fluctuate, even exceed the international prices.

Fifth, the minimum of the using of the technology unbalance the information between farmer and agent or with market so that the mistake happens in the choosing of the type of plant or the amount of plant. Besides that, because the quality of the education that they (farmers) have so low that makes they are hard to be ensured in order that they will try the technique of farming that can give them better yield.

From the problems analyzed before, we can see that the most of the problems happened because the flow of product and information along the supply chain doesn't be managed so well, started from upstream to downstream. That means SCM's role is needed in order that the flow of product and information along the supply chain can be managed well and efficiently.

SCM (Supply Chain Management) is the concept of managing product which is so integrated between supplier, producer, distributor, warehouse, retailer, and consumer that we can obtain the pattern of distribution with the amount of product, location, and the accurate time which in finally, can minimize the cost while increase the service to the consumer.

II. Methods

Methods we used in this research were :

1. Literature Study
   This method is used to obtain the theory, data, or information as reference in doing planning, testing, building, and composing the thesis.
2. Planning and Implementation
   This planning has a purpose to obtain the design of good application program. After obtaining the design then built, run, and compiled.
3. Process model
   The process model that we use is iterative model – spiral by Roger S. Pressman. We split into 2 phase, first is prototyping phase with the requirement gathering from non end-user and second is final phase with the requirement from end-user.
   First phase bring to the fast prototyping phase where the focus is as a mechanism to define the needs. In second phase, prototype will be thrown away (at least some) and the actual software build focus on the quality and maintenance capabilities.
4. Testing
   Testing is the activity to check whether application could run well or not.

III. Results

A. Running System Process

The running sytem today from Indonesia agriculture are :

- Farmer has the habit to plant first then selling.
- Farmer is prioritize the quantity of products then quality of products.
- Farmer then sell the harvest to middleman with lower price or with the "ijon system" (before selling until harvesting time).
- The middleman then sell the harvest back with higher price.

B. General Solution

The suggested solution for Indonesia agriculture problem in Indonesia are :

- Minimize the role of middleman in distribution of agriculture resources by connecting the farmer (producer) with the consumer directly.
- Giving information that's useful for the farmer to decide what plant that will be planted and deciding the selling price.
- Keep the quality to be exact with the market's perception.

C. User Design Process (Producer, Consumer, and Distributor)

1. Process Design for Producer

For produser, application is designed to have the menus, they are :

- Manage product
- Shipping
- See the history of transaction
- See the Profile
- Log out

Figure 5. Producer Main Menu

How the menus work are described below :

a. When user chooses the menu "Manage product", user will be brought to the

page that can manage photos from products, update data's product, add new product or delete product from database.

b. When user choose "Shipping", user will be brought to the page where user can give a task to the distributor partner, add new distributor partner, or delete distributor partner.
c. When user choose "View the history of transaction", user will be brought to the page that will show the history from transactions.
d. When user chooses the menu "Profile", user will be brought to the page that user can see or update its profile.
e. When user chooses the menu "Keluar", user will quit the application.

2. Design Process for Consumer

Figure 6. Customer Main Menu

Customer user can choose five menus that they are "product catalog" for viewing the product that is sold, "cart product" for viewing the product which is selected by user, "view order" to see which product has been ordered, "view producer" to see the location of producer nearby user's region, "profile" to see or update user's profile.

3. Design process for Distributor.

In short words, the structure menus for distributor that they are :

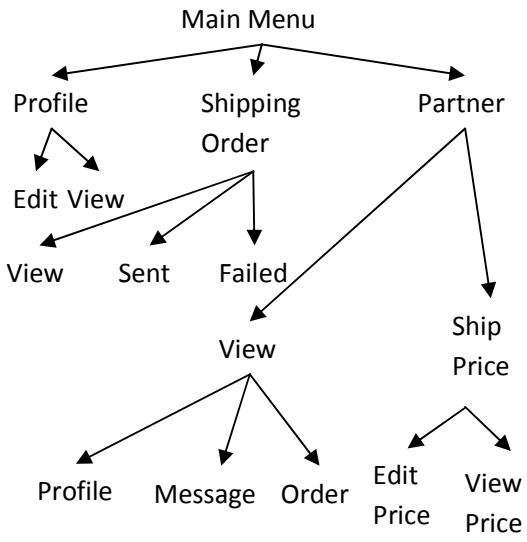

Figure 7. Distributor Structured Menu

Started from the main menu, user (distributor) can choose three menus that they are profile, shipping order, and partner. On the profile menu, user can view and edit his/her profile. Then on the shipping order menu, user can view the list of shipping order. User can view all transaction (view menu), success transaction (sent order), or failed transaction (failed order) with the details inside. While on the partner menu, user can view who is the customer who uses his/her service and manage ship price. Besides that, user can view the detail of their customer, view the history of transaction which has been done between them, and also can communicate with his/her customer by sending a message about i.e., the important thing.

IV. Conclusion

1. This application can help the farmer in improving the welfare because through this application, produsen can directly connected

with customer, not through wholesaler which is in general do harm to the income, so now it can be maximally acquired from farming.

V. Recommendation

For next development, this application can be tried to integrate with Bulog System and Koperasi to make the national security food system safe.

VI. References

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