

Portal Based Knowledge Sharing Optimization On Agribusiness Community Development

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ABSTRACT: Agribusiness system requires electronic business hub, i.e. information system portal, which is able to present all the information, data and knowledge, which are needed by the stakeholders. The portal will facilitate decision, policy and action making activities optimally, in the short term, medium and long term. Excellent information and knowledge about products, processes and businesses to provide the best agriculture practices is very valuable to stakeholders in the agribusiness community, in order to improve national and global competitiveness. Portal development information system requires the active participation of the Community of Practices (COP) in the community, who will share the latest excellent information and knowledge to the community, and can be utilized in daily operations. In the case study, we developed information portal for oyster mushroom agribusiness. The portal contains the latest important news, weather information, price, and excellent product knowledge, production processes knowledge and business knowledge. Test of the prototype conducted by community activists who represent the key stakeholders, which previously granted the operation and maintenance training applications. Applications built continuously by enhancing functionality and performance to increasing its usability.

Keywords : Knowledge Management System, Information System Analysis and Design, Agribusiness Management Information System, IT based Community Development.

1 INTRODUCTION

Agribusiness is the business of agricultural production. The term was coined in 1957 by Goldberg and Davis. It includes agrichemicals, breeding, crop production, distribution, farm machinery, processing, and seed supply, as well as marketing and retail sales. All agents of the food and fiber value chain and those institutions that influence it are part of the agribusiness system. Information and communication technologies are making tremendous impact on the rural economy due to its wide application and appeal [9][10]. Agribusiness system has 5 subsystems, i.e. agriculture business, provider of production facilities, production processing, marketing, and supporting. Communication and coordination between subsystems agribusiness, supported by the availability of adequate information, is important in the successful development of agribusiness community. The accurate information and good coordination between subsystems in perform vertical integration, support community development effectively and sustainably [5] [6][11]. A modern agribusiness community needs an information system to provide all the needs of information, data and knowledge, which are required by the stakeholders. Information Systems is a set of components (data, devices software, hardware, operating procedures, and user community) interacting to produce information [3]. The information support all the knowledge workers to make decision, policy actions and innovation in the optimal manner, that give more benefit to the business, either term short, medium and long term [zuhdi][mihaela][tajdar]. As Data on seeds specifications, pricing information and the availability of raw materials and markets, information about soil structure, type of soil, water, soil and air pollution and weather forecasts are accurate. The system also provide knowledge of effective cultivation techniques, information about financial management and investment development, and other important informations. For modern business organizations, information systems is a very important factor to achieve competitive advantage and enhance the ability in creating profits. Whereas for organization of public services, the implementation of information systems has been a demand to improve service to the public (in particular modern business organizations), through the ability to provi-

tion responses accurately and efficiently [1][5][11]. A comprehensive model is needed to address the limitations of existing methods, by offering a holistic, one-stop-shop information service on a variety of carefully integrated platforms, that implements farmers' feedback, a resource that is used to further enhance information delivery [aisar] and also to empower innovation generation [3][11]. Concerning the use of ICT tools in innovation processes, it is not possible to predict which ICT tools that will be best to use in a given situation, but focus should be on the end user and the purpose of the network. Regular updates in the content of the ICT tool, selecting first movers, ambassadors etc. may play an important role in a successful application [3]. A web clearing house or portal is a kind of comprehensive web page model that specially designed to bring information together from diverse sources in a uniform way. Usually, each information source gets its dedicated area on the page for displaying information. The user can configure which ones to display. Variants of portals include mashups and intranet dashboards for executives and managers. The role of the user in an organization may determine which content can be added to the portal or deleted from the portal configuration. Collaboration involves a different approach to business, that focused on managing business relationships between people, within or without groups, and within and between organizations. Effective collaboration unlocks the potential of the collective knowledge and intellectual capital of the organization and its networks of business partners, suppliers and customers. At the core of true collaboration is the ability to share and catalogue knowledge, ideas, standards, best practices, and lessons learned and to be able to retrieve that knowledge from anywhere at any time [5]. Our research focus on how to optimize knowledge sharing optimally in an agribusiness community development through building web portal. Web portals are valuable applications, that help in displaying huge of information from various resources, and help the users to get latest information, common news, business news, stock and price of goods/product, and any other important information. The portals have an authority to depict together a set of people on the basis of profession, location,

occupation, responsibility, etc. They have innovative features and function to offer its users.

2 METHODS

Knowledge and learning exist as by products of social processes such as those that take place in communities of practice [3][11]. Learning theories help the designers of learning environments understand what they are fostering. Communities provide fertile ground for sociocultural appropriation, by adopting expert practices through social processes, as well. Communities of practice are stable groups of people with a shared set of cultural practices. Frequently, they involve peers although they may be more hierarchical.

2.1 Community of Practices Development

Understanding and building online knowledge-building communities, or online communities of practice needs a framework to enhance collective knowledge. The framework gives model of how learning takes place in knowledge-building communities.

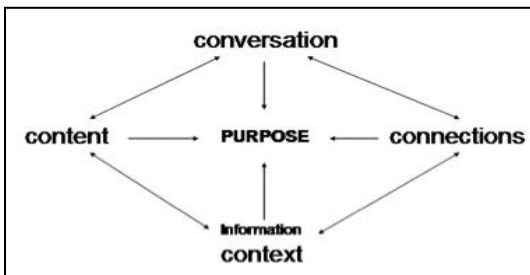


Figure 1. C4P Framework [4]

We apply C4P framework is described as a way of understanding how knowledge is created and disseminated by participants in a community of practice. The C4P framework posits that knowledge is generated and shared when there is purposeful conversation around content in context. C4P is shorthand for content, conversation, connections, (information) context, and purpose [4]. Content is explicit, static knowledge objects, such as documents, videos (monologue). Generating quality content is one of the great challenges of nurturing a knowledge-building community, but people are often hesitant to contribute content. Conversation is face-to-face or online discussions (dialogue). It is the most effective mode of knowledge transfer and generation, because the personal connection and back-and-forth nature of conversation provide the greatest context for information. Meaningful conversation fostered by quality of the content, clear purpose and personal connections. While Connections is interpersonal contacts between community members that involve some level of relationship. Without connections, an online space is merely a document repository (content) or chat room (conversation). Context of information is the condition, whether and how information is useful to community members. Its indicate richness of detail, that makes information are meaningful and memorable, and helps situate knowledge among people who are not physically co-located. Conversations and relationships increase context of information. Finally Purpose is reason for which members come together in the community. It is creates energy and produces results [4][11]. Content shapes conversations and fosters connections. Conversation generates new content and adds context to existing content. Connections spark conversa-

tions and add context to content. Information context connects content to related content and to the community's purpose. Purpose provides the metaconnection between all the other elements. All five elements are important to effective knowledge building in an online community [4].

2.2 Information Portal Development

Web portal is browser based management information system application to perform different activities, such as connected with business processes within the business and integrating applications to support it, and create an online community, that enable users yo share huge of information they need. Development of management information systems can be modeled in a cycle which includes five phases , namely the study of the concept , analysis, design , implementation and maintenance [7], as shown in Figure 2. The first stage is determining how the development of the project and approval of the management plan , while the systems analysis or requirement engineering is the second stage focuses on identifying the needs of the development of information and functional needs of the system. System design is the process of planning and development specifications technical drawing data, software, hardware and human resources and computer networks. The stages of implementation, the program includes the construction process and data bases as well as testing and the migration from the existing system to the proposed system, including training to users. While the maintenance phase of the system is monitoring and evaluation of the need for changes in the functional and performance improvement systems. The requirements of software are key elements that contribute to the quality and users satisfaction of the final system [1]. One of the measures of success of a software system is concerned about its adequacy to the purpose for which it was intended. It is usual to have conflicts and different views of the tasks by the stakeholders, because it depends on the perspectives of their tasks in the system and work environment.

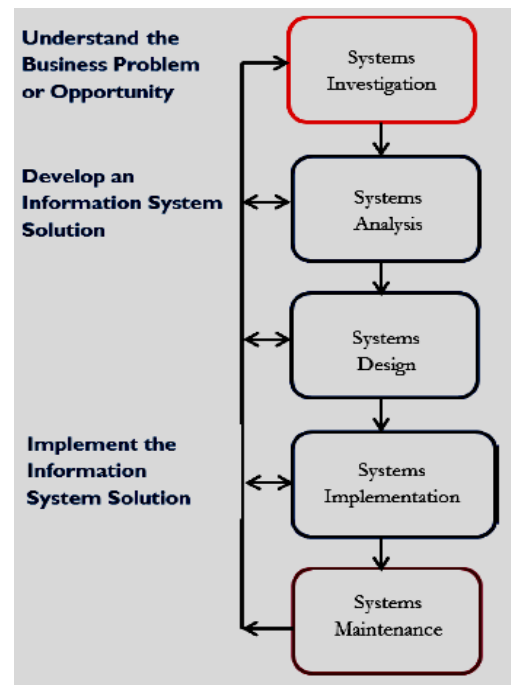


Figure 2 Information system development methodology [7]

3 WEB PORTAL CASE STUDY

Agribusiness community of mushrooms in District Cisarua, West Bandung Regency in Indonesia has 5 main stakeholders, namely Farmer (Seeds and Cultivation Mushroom), Counselor (Counseling Service of Agricultural, Fisheries and Forestry in District Cisarua), Expert (Center for Agricultural Training Lembang), Consumers (wholesaler and SMEs of Mushrooms Processing) and Investors. Mushroom agriculture has been developed since 1980. In the last 5 years there was a decline in production, a unit baglog in 2010 could produced more than 6 ounces in a single harvest, now only produce at most 3.5 ounces. This situation causes decreasing of the number of mushroom farmers group, from 17 groups with 700 farmers yielded 15 tons per day, currently production capacity is only 5 tons. The constraints found are lack of knowledge about how to cultivate mushroom farm effectively, the scarcity of skilled mold, there are no standard procedures (search seeds, organic fertilizer, the process of growing media, and the cultivation of farmers, as well as post-harvest handling, especially if it fails), handling of pollution through air-borne, soil-borne, is increasing. Based on interactive discussion can be concluded that the agribusiness community needs[11]:

- I. Information about best quality seeds from research and development centers and laboratories, since not all farmers can make good quality seeds, because of the limitations of knowledge, technology and capital.
- II. Knowledge of the process of making a planting medium (baglog) and taking care of the baglog to be harvesting fresh mushroom, can be a business choice
- III. Knowledge of choosing the best alternative, whether as baglog maker alone or mushroom cultivation alone, or both, or as a fresh mushroom processing business unit, depending on the capabilities of each community member.
- IV. Counseling and training are required to enable members understanding the correct way and always trying to provide themselves with the knowledge of leading edge technology in the field. Communities need to synergize all of these facilities, then the web-based management information system solution options that should be applied.

Web portal generally has many interactive content [poznan] as follow:

- i) Message Boards provides solution for facilitating conversations around shared ideas within a department or project team, or for capturing and sharing the knowledge of the workgroup. Additionally offers recent their usage statistics, posts and users can subscribe to threads via RSS and reply to threads by email. Message Boards are secured by granular system of authorizations which grants varying levels of control to different user.
- ii) Wikis enables the community to build up and document important or interesting information within Wiki which can compete with other standalone products in the robustness of feature set.
- iii) Activity Tracking - This feature keeps tabs on the most recent activity on Message Boards, article posting and other tools. The information is displayed in recent activity portlets and on a Facebook-like activity wall.
- iv) Instant message - A friends list automatically displays the names of all other logged-in portal users. If the

user has something to say, just give instant message them. Also with chat features like profile pictures and customized away messages.

- v) Email, if the user needs to send an email, he/she may does it directly through the portal. A webmail client with a sleek, user-friendly interface can be configured to interface with many popular email servers.
- vi) Shared calendar - Community-based calendars that allow users to create, manage, search for events. Events can be shared across communities, and event reminders can be set up to alert users of upcoming events by email, IM, or SMS Announcements and Alerts
- vii) Broadcast messages to different group of users whether they are simple announcements or newsletter-like in purpose. Each user can control how they receive alerts: via portal-based web alert, SMS, Email or any additional delivery mechanisms configured by the portal administrator.
- viii) An opinion poll, sometimes simply referred to as a poll, is a survey of public opinion from a particular sample. Opinion polls are usually designed to represent the opinions of a population by conducting a series of questions and then extrapolating generalities in ratio or within confidence intervals.

4 RESULTS AND DISCUSSION

The mapping of user and the system requirement was used as the basis for designing application, which is the architecture of a solution for these needs. The application presents automated business processes to be facilitated in the system, to meet all the system needs of the user activity, both functional and non functional. Interaction system design focuses on providing facilities and display navigation to the user, so that the application easier and more convenient to use. Implementation of the system needs infrastructure in the form of software (such as operating systems, system manager database, web service system, etc.) and hardware (such as workstations, servers and computer networks).



Figure 3 Prototype of application, which has been published

To facilitate the development and application testing, this initial application has been published which can be accessed at <http://www.jamur2cisarua.com>. This temporary domain name,

will be changed to the standard name for the community. Visitors to the site are grouped in 7 categories of users, the guests and 6 members of the stakeholders (farmers, counselors, experts, consumers and investors). Guests can access public information which has a menu structure on the main page. Guests can access the general information on the menu structure. The main page as follows:

i) Home

The page automatically appears first, contains information about the latest news and important information about community or related to the community. Common information about the current time, weather, agenda, information searching and login facility for community members.

ii) Product Info

The menu that collects information about the characteristics, specifications and details about the best mushroom variety, both in terms of quality and price, subdivided into a sub menu Seeds, Organic Fertilizer, Media, baglog, and fresh mushrooms)

iii) Process Info

The menu contains information and know-how effective production process (with failure are minimal) and efficient (with resource consumption is minimal) and innovation necessary so that the product of interest by the consumers. Information related to breeding, barn house treatment, fertilization, harvesting and post-harvesting technology).

iv) Business Info

The menu contains information and knowledge about how to manage and develop the farm from upstream to downstream in a professional manner, based on best practices of farm businesses as well as other types of businesses. An example of how establish and develop partnerships, develop marketing, excellent service on consumer, business strategy, financial management and effective resources, as well as develop investment.

v) Gallery

Supporting source that contains a collection of objects multimedia, whether in the form of pictures, photographs, animation and video that needs to be published, for encourage users, and provide information performance visual or audio-visual form. Visitors who are members of the community agribusiness given account, to facilitate their in carrying out his duties. There are 6 categories user accounts, namely:

i) Administrator

Communities may appoint one of its members, to manage user accounts and traffic load information in the application operation. For example approve and cancel the account, moderate discussion and consultation, upload news and agenda community activities, answering questions from guests.

ii) Farmers

Farmers need the facility to:

- a. Asking questions / problems
- b. Uploading / uploading data (price developments, harvest, work plans, case studies [success/failure story])

- c. Download technical data (weather, humidity, soil type map, etc.)

iii) Extension

Agricultural Extension, require

- a. Uploading information dissemination, regulation, etc.
- b. Downloading data and community activities information and report

iv) Experts

Experts need facilities for:

- a) Read and answer the questions
- b) Uploading information knowledge critical/research and development current
- c) Uploading info on the agenda related to technological developments (expo, seminar, etc.)

v) Consumers

Consumers need

- a. Uploading of information development price, market demand, etc.
- b. Downloading data development request markets outside the region

vi) Investors

Investors need facilities for:

- a. Asking questions / problems
- b. Uploading / business profile data upload
- c. Download business profile of an agribusiness to show to investors

5 CONCLUSION

Oyster Mushroom agribusiness system requires a portal based Management Information System, which can be empowered agribusiness community to implement operations agribusiness enable to provide some mutual benefit to the stakeholders. The system facilitates users by providing and exchanging information and knowledge, which is needed in excellent agribusiness operations. The knowledge related to their necessary to achieve business operations with the best performance, through maximizing utilization and sharing of knowledge about products seed, excellent process knowledge, best practice of business operations knowledge, among members community. Early prototype that has been made needs to be improved its usability, so that stakeholders feel the benefits of significant of interest, either from the aspect of improving insight and expertise as well as welfare increased. Effective collaboration between the application developer and the users in community is needed, such that all information needs can be provided by the system.

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