Journal of Information and Operations Management
ISSN: 0976–7754 & E-ISSN: 0976–7762 , Volume 3, Issue 1, 2012, pp-25-28
Available online at http://www.bioinfo.in/contents.php?id=55

A COMPONENT- BASED MODEL FOR E-BUSINESS, INTEGRATING KNOWLEDGE MANAGEMENT AND E-COMMERCE

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Received: December 12, 2011; Accepted: January 15, 2012

Abstract- In today's era of rapid globalization and faster information retrieval companies are migrating towards e-business models which are more responsive and user friendly, and which employs information and knowledge-driven applications, that help them respond rapidly to changing market conditions and customer needs.
In today's scenario Knowledge management and e-business are becoming two complementary domains. Coupling of these domains may result in optimizing activities and to leverage resources. In this paper, a Component-Based e-business model in association with knowledge management for semi-dynamic and deterministic environment of ecommerce is proposed. Here Components are used to represent the sub-domains of knowledge management and applications of e-business. These components may be cohesively autonomous or coupled with other components. These components may be used as a centralized or distributed Knowledge-Bank by consumers and companies through e-commerce. In this study, we are defining a Component-Based Framework as a basis and then a detailed architecture is defined in phases.
Our focus is on exploiting the advantages of knowledge management for constructing, capturing and organizing information and then integrating the features of e-commerce to preserve, transform and deliver information. The proposed model couples different components of business using the agile-methodology.
Keywords - Knowledge Management, E-business, Component, Semi-dynamic, Deterministic, Agile, Mundane

Citation: Neelam Singh (2012) A Component- Based Model For E-Business, Integrating Knowledge Management and E-Commerce. Journal of Information and Operations Management ISSN: 0976–7754 & E-ISSN: 0976–7762, Volume 3, Issue 1, pp-25-28.

Introduction

Knowledge management and e-commerce are closely related because e-business users need a suitable knowledge management that can help them to obtain the kind of content they need together with as correct and complete information as possible. The purpose of this paper is to provide an awareness of the components that should be considered in the knowledge management based e-business systems.
Knowledge-driven applications have the potential to expand the use of information, by transforming existing huge data collections into revenue-generating asset [1].

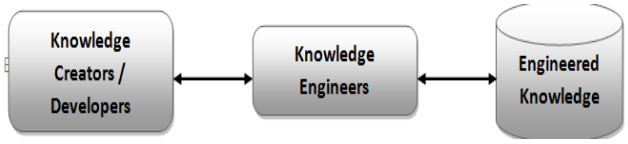

Fig. 1- Abstracted Model

Knowledge Management is the collection of processes that govern the creation, dissemination, and utilization of knowledge[2]. E-business facilitates rapid customer solutions and faster information retrieval [3].
E-business comprises all forms of electronically supported CRM (Customer Relationship Management) ,SCM (Supply chain Management and ERP) [4]. The information and communication systems, whether networked learning or not, serve as specific media to implement the business process.

Proposed Model (Fig. 1)

Introduction

In this paper, a Component-Based e-business model in association with knowledge management for semi-dynamic and deterministic environment of ecommerce is proposed. Here Components are used to represent the sub-domains of knowledge management and applications of e-business.
We can divide Knowledge Creators and developers in five different

components, namely
I. Corporate or Organization,
II. Stakeholders,
III. ERP professionals,
IV. SCM professionals,
V. CRM professional

These components are categorized according to their queries and needed information.

Similarly Engineered Knowledge can be categorized into five inter-communicating repositories which are stored at servers. They can be classified as-

I. Organizational Data
II. Suppliers Data
III. Customers Data
IV. Product information Data
V. User or consumer feedback and responses

These repositories are created according to the knowledge and data provided by the corresponding component. These components must interact with each other to facilitate the access and organization of knowledge management.

Major Components of Component-Based Framework (Fig.2)

Server Site Components (SSC) (Knowledge Management Components)

Corporate and organizations

This component includes information regarding the organization, its various departments, its certification etc. (ISO). To share knowledge and information among different academic institutions it is required that they have a common platform. This model provides help to develop such a platform

Stakeholders

This component includes the information of different stakeholders. This component is useful to provide the vast and deep exposure of industry to the customers and suppliers. This component is also helpful to fulfill the gap between industry and consumers.

ERP professionals

Enterprise resource planning (ERP) systems integrate internal and external management information across an entire organization, embracing finance/accounting, manufacturing, sales and service, customer relationship management, etc. ERP systems automate this activity with an integrated software application [13]. Knowledge and information provided by ERP professionals are included in this component. It includes capabilities and functionality that must be supported by an ERP system. This component helps to study and explore concepts on different reengineering processes and decision making process.

SCM professionals

A supply chain is a network of facilities and distribution options that performs the functions of procurement of materials, transformation of these materials into intermediate and finished products, and the distribution of these finished products to customers.[14]

This component can be coupled with every other component of the proposed model to through and receive queries and responses. It also includes views of suppliers, production organizations and their relationships with the various other components.

CRM professionals

Customer relationship management (CRM)is a widely implemented strategy for managing a company's interactions with customers, clients and sales prospects.[15]

This component is composed of customers and consumers of various products. Like customers are also query generators. This component can be coupled with every other component of the model.

Client Site Components (CSC) (E-Learning Components)

Suppliers Suppliers want to share knowledge about their materials etc., they must communicate it to the *Knowledge Engineer,* who further engineers this knowledge into information in a prescribed manner and then store it to the corresponding server site database component. The uploading of information is done via knowledge engineer, i.e., they cannot directly upload or update the server site corresponding component's data. But they can access the stored information directly through an authentication and authorization mechanism (i.e., Login and Password).

Industry Professionals

They communicate their knowledge to the Knowledge Engineer in the form of documents, reports, articles. Then the Knowledge Engineer must translate this knowledge into the predefined format and stored it in the corresponding server site component. Like the Institutions, they can access the stored information directly through an authentication and authorization mechanism (i.e., Login and Password).

Customers

Customers can query about the product, can buy a product online, search and compare the product with other brands etc. and to store it in the corresponding server site component. This knowledge must be available to all. To store and update customers need the help of Knowledge Engineers, and to access stored information they need some sort of authentication and authorization mechanism (i.e., Login and Password).

Forums

Like above components they can provide their researches to the Knowledge Engineer to store it in the server site component database. This component is basically query generator. They can post queries and questions to other components. Like other components they need authentication and authorization mechanism to access the server components.

Retailers

This component may throw queries regarding the product contents, price. discount policies, accessibility etc.. They can access to other components of the model.

Knowledge Engineer Component (KEC)

A knowledge engineer is a professional who works with the experts to construct and capture the knowledge (data, facts, information and rules) they posses, at one end and then integrate the features of e-business to preserve, transform and deliver this information at the other end. The knowledge engineer builds the knowledge base, using an iterative, prototyping process until the data is acceptable. Knowledge Engineers and his staff provide help to knowledge creators and developers in:

Development of-

- **User Interface-** KEC develops user interfaces with the help of CSC and users to ease the capturing and access of information.
- **Access Model:** KEC defines the access protocols, rules and

services provided by SSC component to the client components.

- **Access Priority:** KEC sets the access priorities and privileges to different CSC to access the SSC.
- **Engineered Knowledge:** KEC builds the knowledge base, using an iterative, prototyping process until the data is acceptable.
- **Environment Modeling:** KEC manages environmental factors like boundaries, restrictions and unwanted situations.

Management of-

- **Tacit Knowledge:** KEC creates techniques, technologies, and methods for getting unformatted and raw information from the CSC and to make better use of accumulated knowledge.
- **Explicit Knowledge:** KEC manages and organizes data, documents, things written down or stored on computers.
- **Learning Loops:** They create learning loops, as the creation, dissemination, and application of knowledge produces an adaptive learning process from client-server-client.
- **Knowledge Resources:** KEC and his staff provides technical help to explore the knowledge of CSC, and further they help to make easy access to the stored knowledge.

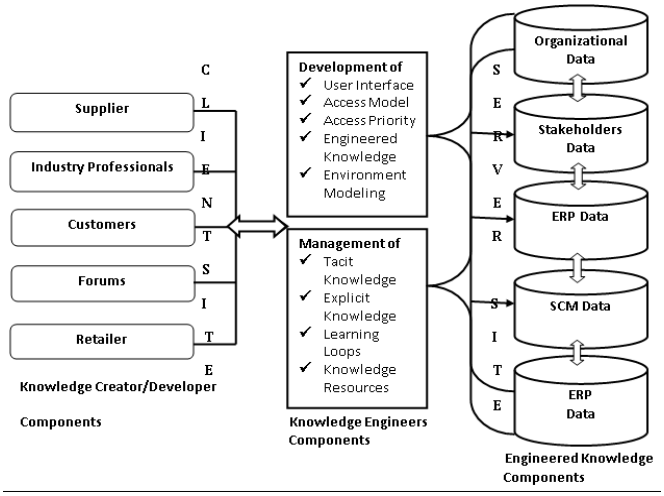

Fig. 2- Component based Knowledge Management

Communication among Components (Fig. 3)

Communication between Knowledge Creator/Developer Components and Knowledge Engineer Components:

These components can interact with each other using internet, intranet or other communication medium to discuss the issues and to provide data and knowledge, to the corresponding component. There must be some authentication based mechanism (Login name and Password) to keep track of the each and every individual belonging to that component.

Communication between Knowledge Engineer Components and Engineered Knowledge

A knowledge engineer is a professional who works with the experts to construct and capture the knowledge (data, facts, information and rules) they posses, and organize and store it at the server, and then integrate the features of e-business to preserve, transform and deliver this information to the corresponding client. KEC can interact with through internet, intranet or other communication medium.

Communication between Knowledge Creator/Developer Components and Engineered Knowledge Components

Client Side Components can request to the Server Side Components for their queries and required information. This communication may be based on authentication and authorization.

Authentication

A verification mechanism that validates the identity of all clients and servers, allowing communication to occur only when both sides are verified.

Authorization

A filtering mechanism that allows access to the client or server environment only by those individuals with appropriate authorization codes.

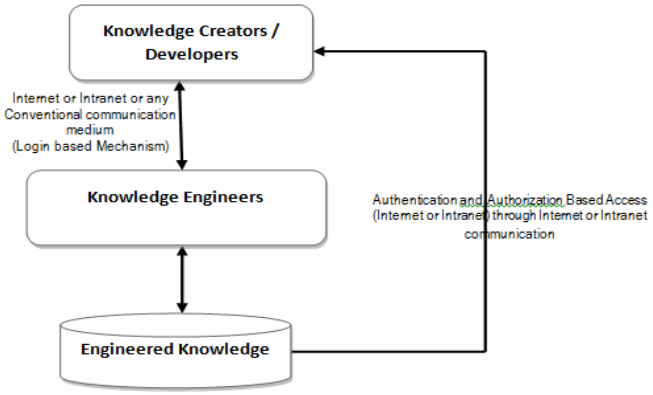

Fig. 3- Communication Model

Conclusion

From effective knowledge management, the organization can build suitable e-business Managing knowledge should be based on technology platforms to provide the sharing and exchange processes. Therefore knowledge management is a combination of human resources, technology resources, and information resources. In conclusion, knowledge management does not exist in specific organizational position or management level, KM can be found in the overall corporate strategy, organization objectives, business operations, and people.

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