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ABSTRACT

Business Process Management (BPM) Systems is not often used organizations as many have predicted due to various difficulties especially in the area related to organizational management. This paper we discuss the history of business process management and a framework on how a business should apply BPM philosophy and IT together to establish a successful BPM system.

Keywords: Business Process Management, BPM, Workflow, Forms,

INTRODUCTION

Business Environment

Every business today has to cope with a collection of operations that involve individuals from different divisions. These involvements are usually created because humans perform best when their work scope is not too broad. When people have to collaborate together, the order of operation must be clearly defined. Otherwise, confusion or redundant work will occur. Designing and resolving clear work orders are, therefore, logical procedures of managers in business.

Managers are often presented with many operations waiting to be initiated and supervised. It is often the case in the real work environment that managers spend most time supervising or managing employees and resolving customer issues. The time that managers spend on improving operation and collaborative effort is then reduced due to the increase demand from customers. Operations are often become routine. Businesses that rely on routine operation are often in the position to lose its competitive edge due to the ability of its competitors to catch up. Hence, it is important that managers learn techniques on how to improve their business operations.

Workflow

Since most operations involve individuals from various departments, communication is required and a common communication protocol must be established. Unfortunately, this logical business operation seems to be lacking in many businesses. This is because companies typically divide its business into departments which usually operate differently, so they may not want to speak the same language. Instead, when a department has to work with other departments on a regular basis for the same operation, they usually create "forms" so that they do not have to rely on human conversation much which is a major source of error and inefficiency. Form is one of the most powerful tools for collaboration in workplace. Forms also help control work order such that individuals in all departments know exactly what do based on the instructions and data fields specified in the forms. The sequence of steps or the work order is called a workflow.

A workflow can be viewed as a model of a business operation. Not only it can help define collaboration point, it can also help solve inefficient points in the network of operations. The use of workflow has been received a lot of attention since 1990s due to its highly effective benefit of reliably controlling a repeat sequence of operations. A complete workflow defines patterns of activities, worker roles, resources and information that flow in the network of activities. Combining workflow with management, activities described in a workflow can be documented and later reviewed for performance improvement.

The concept of workflow has been originated in the area of engineering and production because operations in those areas are well defined and mostly sequential with clear approval and disapproval points and paths. Workflow can be viewed as a tool to help connected different business departments together and at the same time divide functions of each department clearer.

To a number of companies, a workflow is basically a form that has to be filled out by a number of responsible staffs from various divisions. In this case, workflow paths are linear and often straightforward. However, there are situations which allow the flow to be separated into many paths. For example, a cash deposit operation in a bank will be handled by two different divisions: a unit for cash deposit valued less than one million baht, and the other unit for cash deposit valued more than one million baht. This way, without clear picture of the workflow paths, operations can be confusing to some employees.

A number of companies also refer workflow to processes, planning, flow control diagram, or supply chain. For whatever it is, workflow is a fundamental concept describing how tasks or activities are connected together to accomplish a business operation. The first business that brings

workflow concept to use is the publishing business in around 1980s. In order to publish a newspaper, for example, an integrated accumulative work conducted by a group of people is required. Without proper workflow designation, the operations of every newspaper publishing would be very hectic. Since then the workflow process revolution has extended into manufacturing, administrative, and resource allocation processes in organizations.

Workflow Management System

Thanks to the influence of information technology since 1980s, IT has been used to help manager manage workflow information better. Documents have been digitized and kept at a single server location. IT computing and network infrastructure have been deployed to reduce the usage of forms and documents. Data required for different tasks and operations can now be kept in a database for easy access. Managers and workers can view the status of operations and processes better so that managers can manage workflow conveniently. The software that supports the management of workflow information is called workflow management system.

In late 1990s, the boom of the Internet has also helped extending the workflow management into e-commerce transaction. Customers can purchase a product over the internet without using documents and the workers in an e-commerce company know exactly the steps to process the order and how to collaborate with each other. Information about the order is presented to all workers.

Workflow Management System (WMS) seems to be the silver bullet that can be used to solve any business problem. However, not many businesses appear to use workflow management system as a core business IT operation. This is because most workflow management system software focuses more on the flow creation aspect of the software. They present crafty tools and programming languages for creating connected paths of tasks or activities easily. This is a major achievement in the aspect of computer science, but it is not for business users who want the workflow to be used in their business. For every business, workflow management must also carry data and information management in order to properly keep track of business operation while keeping track of the workflow itself. A workflow management system that can draw beautiful graphs will not create any benefit to a company unless it includes document, data and information into the workflow.

Document-based Workflow

Since the introduction of Workflow Management System (WMS), workflow has been a key operational tool that helps businesses to cope with repeated activities. The data stored in workflow management system acts like data in the forms that has to be sent to different department.

In traditional organization, documents and forms are first created to handle repeat work. Forms are filled out and supporting documents are attached with the forms to request another division to start work process. Without the use of workflow management that integrates with document management systems, forms and documents must be copied at each division that the forms and documents are sent to. This is because all departments and divisions have to protect themselves from possible changes in the forms and documents once the forms and documents are out of their hands to be processed by another division or department.

Using document-based workflow also create the risk of document accessibility. Documents in paper form cannot be read easily by anyone who is not physically presented with the documents. Electronic documents are also difficult to manage access due to different types of users.

Fortunately, many workflow management solutions offer an interface to document management system. However, the document management system is usually not created to support workflow management system in the first place. This makes the deployment of workflow management system with document management system capability difficult.

Business Process Management

The unsuccessful deployment of workflow management system into real businesses makes computer scientists to rethink how to design software systems. The business aspect of the operation must also be included into the concept of workflow. The workflow itself is viewed by business users as operational level tools, not suitable for running the business at the strategic level. Thus, workflow management is replaced by Business Process Management (BPM) [1,2] which also includes a systematic method to optimize and improve business performance at the operation level. Applying BPM to organizations not only help the organizations to manage workflow, but also integrate the concept of quality control into the concept too.

Actually the concept of BPM is not new. Similar management practices such as Total Quality Management, Malcolm Baldrige Award Criteria, Six Sigma, and ISO 9000 Quality Program aim to 7

produce similar result. However, these practices concern more at the strategic policy level than at the operational level. They focus on organizational processes at the top level such as the process for the creation of problem-solving heuristic, the process for customer and competitor fact findings, and the process for quality evaluation and improvement. Generally, BPM comprise of three main activities which are the discovery of all routines that underlie the operations of an organization, the measurement of process efficiency and effectiveness, and the routine process improvement planning.

Business Process Management System

Most software vendors support four major business process management functions including workflow design and modeling, execution of activities, data collection and process monitoring, data evaluation, and data reporting. In general, BPM software is Workflow Management software with business data reporting features. However, business history indicates that 70 percent of Business Process Management projects failed due to employees' resistance to do extra work for process management, the inflexibility of workflow path, misunderstanding of BPM philosophy, and, the most important of all, the lacking of the vision to see the business in a big picture.

OVERCOMING DIFFICULTIES IN DEPLOYING BPM SYSTEMS

We discussed earlier about the difficulties of deploying BPM systems with real businesses. Many traditional businesses today have staffs working with the vision that only focus on their own scope of responsibilities. Thus, each department generate forms just work with the another division without seeing the entire flow of the process. For example, a customer service staff of a PC retailer who talks to a customer who is purchasing a laptop computer may not know anything about the process of shipping the computer to the customer's address. As a result, a customer purchase process workflow may contain many forms used between departments. There is also a high possibility that forms that are created for the same purpose are generated by various departments.

This example clearly shows that it is typical for a company to have departments that do not integrate well with each other. In order to help solve this issue, we start by realizing typical business process management requirement first before suggesting the methods on how to apply BPM systems.

We divide electronic business operations into four major categories as follows:

1. Initiation: creating websites and delivering information and services online. This focus on one-way communication between the business and customers.
2. Interaction: enabling customers to interact with the business by setting up two-way communication service channels such as customer service e-mails, online chat, and web forums.
3. Transaction: allowing customers or internal staffs to execute a business operation (such as product purchase) and start a workflow.
4. Integration: integrating internal services across the organization to work together to provide the customers with the best services.

These four categories will help us define the general framework for deploying BPM system in businesses in later sections. These three categories are common to most electronic businesses.

Framework for BPM System deployment

BPM is a philosophy and procedure for continuous optimization and improvement of business operations. Framework for BPM follows the four categories of business operations discussed in the previous section. Starting at the initiation stage, the workflow of operations and data definitions must be modeled first before designing the website and web applications of the companies. This is because appropriate information and application design on the website can allow customers and employees to follow steps corresponding to the workflow models setup in this initiation stage.

Then the business should provide two-way communication channels to customers such that the business can interactively respond to the customers quickly. Many businesses do not see the importance of this business service. However, this business service is one of the main reason why we need to implement electronic business and how electronic business can help differentiate a business from the others. If implemented, a major business workflow reengineering will be needed in order to optimize the execution of the workflow to satisfy customers demand. Workflow model for this category will not be easy to be designed. This is due to complication and uncertainty in the

process of dealing with customer issues.

After one-way (website) and two-way communication channels are prepared, the business will be ready to prepare the workflow to handle transactions that will be generated by the customers. During this transactional stage, processes should be monitored in order to keep track of data input by customers. The data collected must be stored and indexed in a database for process evaluation and process improvement at the integration stage.

Deploying BPM Framework

In order to start deploying the framework, workflow systems must be realized and modeled. It is often the case that companies do not start modeling workflow since the beginning of the company. It is likely that the businesses will have their own operational handbook and some forms for each department first before deploying workflow management system. For some companies, there can be a few hundreds of operational instruction workflow.

Once the forms and operational steps gathering phase is completed, the business must group forms and documents that have similar purpose together. Then, the business must elect a number of committees consisting of staffs from various departments corresponding to each group of business operations to clean and compact the forms and documents.

According to the authors' experience, this step is the most difficult because different individuals have different views of each process. The distribution of responsibilities and duties must be fair. Most importantly, the chairman of the committee must have a lot of experience, be able to look at the big picture of the business goals and objectives, be respected by all departments, and have authority to make decisions about the compact workflow.

The modeling of workflow must correspond to the four categories of business operation. Even though the four categories are not related to each other in terms of business purpose, but their data and workflow must be linked together. Hence, the modeling of BPM workflow must take into account the four categories of business operation as well.

Once the workflows are compacted and finalized, the business can start deploying BPM system software. Most businesses follow simple steps which are as follows:

1. Define organizational strategies and objectives.
2. Define key data to be collected from the key performance indexes.
3. Define key operational plans and business processes that support the business objectives.
4. Define detailed workflows that support the business operations.
5. Define data to be collected for workflow and business process monitoring.
6. Create documents or forms which will be used to collect data in transactional phase. Make sure that the data collected must be kept in the database without data redundancy.
7. Associate flows and documents with workflow by assigning forms and documents to each workflow.
8. Define data collection and data analysis plan. Make sure that the data is kept in the database.
9. Test the workflow activating the BPM software. The data entered by the individual who starts the workflow will be collected in a database so that it can be used in the interaction and integration stage of the business operation.

Initiation: Process and workflow modeling
Interaction: Process execution and monitoring
Transaction: Data collection
Integration: Evaluation of all business processes to find opportunities for improvement and drive for organizational change.

Table 1: Business Process Management Execution Framework

By deploying the BPM systems as suggested above, the organization's BPM effort is separated into layers as shown in Figure 1. In general, the IT infrastructure that helps support all BPM operation is the database because data and information are key in making workflow and business processes operational with human. However, the process of obtaining each model does not follow the order of the layer.

Before the DATA MODEL is defined, the business managers must finalize business objectives and strategies by using any business process management methods such as Total Quality Management (TQM), Malcolm Baldrige Award, ISO 9000 Series, or Six Sigma. The objectives will define the key performance indexes (KPI) of the business that managers will

use to measure the performance of the business in the market. The KPI will be used with balance scorecard or dashboard in order to provide real time report on business performance. This steps leads to the final designation of the data model.

However, this data model that the firm just established cannot completely support the operation of BPM. BPM also requires the model of workflow and performance improvement strategies. Hence, once the key data model is defined from business strategies and objectives, key process flow must be constructed.

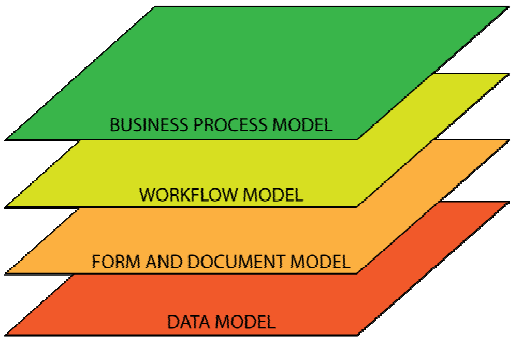

Figure 1: Implementation structure of BPM system deployment process.

As mentioned earlier, it is not easy to create key process flow. Departments across the business organization have to sit together to agree on the process flows according to the business rules. In some cases, the limitation of the BPM systems may have to be taken into account during the design of the business workflow. In addition, the data, the type and layout of documents and forms to put data in, and the staffs responsible for monitoring and controlling the flow of the data and documents must be defined. In addition, approval points and alternative routes must also be addressed during the workflow creation process.

This process will be even more difficult if exceptions can happen. A company that has to offer services with quickness may have to sometimes trust the customer or previous department and let the process to skip some activities in the workflow. For example, in stock trading operation, when a customer deposits some cash and purchases a number of stocks right after the cash deposit, the purchase must go through before the auditing department can finish verifying the cash deposit settlement which can take up to a few hours. The speed of the change in the price of stock is much more than the speed of the auditing department. Hence, in some situations, workflow may have to allow such exceptions. However, as mentioned earlier, workflow is generated to support routine operations. Exceptions should always be considered during all business workflow modeling and it should be included in the workflow design if possible.

After the design of workflow is completed, it is necessary for all departments to create a medium of communication. The medium of communication can be either physical such as paper-based forms or paper documents or virtual such as electronic forms or electronic documents. The model of forms and documents will be necessary for routine works such that any individual, or even new employee, will be able to understand how to enter data and information and execute the workflow process immediately and conveniently. Designing forms and documents to be used with workflow is an art. Good forms and supporting documents allow employees to feel how well the company operates. Confusing forms usually visualize the complexity in workplace. This should be avoided.

The forms and documents should be integrated with workflow management systems such that the forms and documents are used as tools to collect data for the workflow. The status of workflow and data collected in the database can be retrieved and reported for business managers. The selection of what data to be collected, how to analyze data to create information, and how to report the information are key components of the business process modeling. These components also required the application of the philosophy of business process engineering and quality frameworks.

CONCLUSIONS

Nowadays, universities and training institutions offer management courses which prepare managers with business process management philosophy. This philosophy can be applied successfully today, in particular in large enterprises, with the help of information technology. However, applying BPM systems is not an easy task. Managers and every staffs must have both the clear picture of the business, the process of using BPM systems, and the knowledge of data required for the process flow. Most managers know the benefits of using BPM systems but deploying it requires much hard work. Clear understanding of steps to implement BPM systems offered in this article will help managers to foresee difficulties and prepare to tackle them.

The managers should not forget that the ones who operate BPM systems are humans, not machines.

BPM systems should be used to help solve routine works. Since not all work processes are routine, business managers should always have contingency plan specified in the workflow so that their employees will know exactly what to do in case emergency situation arises.

During the design of the BPM systems, business managers must ensure that the systems support the tradition BPM approaches which are reuse, engineering, communication, and maintenance.

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