

Empirical Assessment of Factors Influencing Success of Collaborative Enterprise 2.0 Implementation Model of Manufacturing Industrial in Thailand.

Phuangphairot, N.

Mekhabanchakij, K.

narongrit2000@gmail.com, kittima.me@gmail.com

Abstract

This paper presents an empirical assessment of factors influencing success of collaborative Enterprise 2.0 implementation model of manufacturing industrial in Thailand. It focuses on assessment of factors influencing success from collaboration oriented model embedded Enterprise 2.0 which tends to have organization benefit with improved business performance. The implementation model used social integration mechanism of ERP, Activity Based Management (ABM) and Enterprise 2.0 technology tools. (social media for cross-functional, boundary spanning knowledge sharing, and communities of practice) With adapted the framework of Business Absorptive Capacity can do the realized transformation exploitation from potential acquisition assimilation in organization knowledge. This study develops a bottom up management approach for collaborative and effective deployment of Enterprise 2.0. The approach developed in this study deployed business performance management concepts in implementing enterprise systems which aims to improve each unit in production hourly efficiency performance and provide core management control system capability. Based on this approach, an experimental prototype model has been created and used in developing a real-life enterprise information system. This research is a study of an electronic industry in Thailand, which is in the form of a Collaborative Enterprise System Implementation Model. The finding has shown in the outcomes of business performance ratio improvement.

1. Introduction

Currently in the high competitive, how to be a sustainable business is challenged to management. [19] Organization which has innovation can sustain in business. [14] The Business Process Absorptive Capacity Model captured the conceptual from knowledge and experience learning of organization potential to realize capacity and for organization gain

sustainable business innovation. [9][16][20] With assumption the success in implementation ERP system have a good chance in competitive advantage [15][3][14] and Enterprise 2.0 bring the WEB 2.0 technology to use in Business. [2][12] There is a lot of embedded Enterprise 2.0 with ERP system in form of Web application. [6][7][13]

This paper presents how to implementation a Collaborative Enterprise System Model towards Business Performance Improvement of Manufacturing Industrial in Thailand. Further on we will call "CEMS" Model. Enterprise 2.0 is mainly focused on answering to people needs and to stimulate flexibility, adaptability and innovation. Ontologies define a common vocabulary to share main information and there are the terms of shared and consumed within the context of Web applications.

2. Objectives and Contributions

2.1. Objectives

This paper considered the following objective points; 1.) To provide Collaborative Enterprise System Implementation Model can manage by each unit itself. Every unit will sustain business process performance. 2.) To provide knowledge sharing source in the social media and network for users. They will have information in social users to monitor and discussion how to control cost and profit. 3.) To provide the tool to enable production cost and profit problem solving. This social media and network will absorb "Tacit", knowing-how knowledge and "Explicit", knowing-that knowledge from organization for knowledge pool and activation to realize capability for business process performance.

2.2. Contributions

CEMS model is based on development IT enterprise for supporting business process by concept of Service Oriented Architecture (SOA), Software as a Service

(SaaS) and Collaborative Enterprise System Implementation model. There are three contributions of this.

The first is to have a Collaborative Enterprise System Implementation Model for the social media to sustain in production cost problem solving.

The second is to value added of monitoring cost and profit control management by case study will sustain hourly efficiency performance improvement.

The third is to prove the concept of absorb capability of organization from potential to be realize. The CEMS model can prove Enterprise 2.0 to sustain hourly efficiency performance improvement. The tacit or explicit knowledge is Human Capital. Each problem solving will keep for study or reference.

3. Proposed Prototype Model

For explanation of CEMS prototype model can approach with the following items; conceptual model and methodology of Enterprise 2.0 implementation.

3.1 Conceptual Model

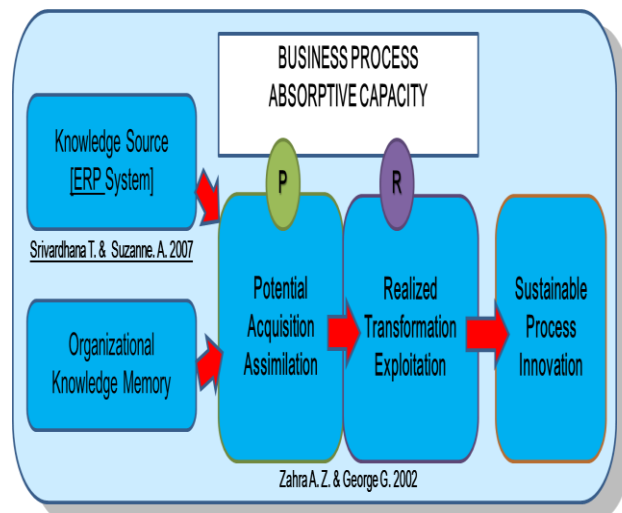


Figure 1 CEMS Model that adapt to Business Process Absorptive Capacity Framework

Figure 1 defines CEMS Model adapted the framework of Business Absorptive Capacity, the first part is input part, Tacit and Explicit knowledge is Human Capital that are knowledge source and organization knowledge memory in organization. And ERP system can be knowledge source to sustain process innovation. [14][17][18] The second part of process realized transformation exploited from potential acquisition assimilation in organization

knowledge. Enterprise 2.0 tools will be social mechanism by created social network relation in organization. Social media means a group of Internet-based applications which build on the ideological and technological foundations of Web 2.0 and business used in form of Enterprise 2.0, and that allows creation and exchange of user-generated content. [5] The characteristic of social media will be defined information of identity, conversations, sharing, presence, relationships, reputation and groups. Enabled by ubiquitously accessible and scalable communication techniques, social media has substantially changed the way organizations, communities, and individuals communicate. [9] And the last part is output that assess the factors influencing success of collaborative Enterprise 2.0 implementation model how outcome sustain process innovation.

3.2 Methodology of Enterprise 2.0 Implementation

There are seven components to define detail concept of Methodology of Enterprise 2.0 Implementation are as below.

1. Business Process Mapping
2. Enterprise 2.0 Setting
3. ERP/ABM Integration
4. Hourly Efficiency Report (HER)
5. Business Performance Report
6. User Perception and Satisfaction Survey
7. Analysis & Conclusion

To change the effective and beneficial to the business, competitive advantage and can sustains business. Figure 2 it describes the methodology of Enterprise 2.0 implementation which this consists of two parts, ERP/ABM System and Enterprise 2.0.

Component #1: Business Process Mapping.

The default configuration by adjusting business processes (Business Process Mapping) in the event ABM is linked with the company's ERP system for environmental experimentation. The EMS must implement the necessary adjustments.

The transaction must be settled to the same understanding. It has to be an agreement between the relevant departments in the entire flow of business processes (business flow) and an agreement on the implementation of the business process. (business process agreement - allocation of common charge)

Component #2: Setup Enterprise 2.0 system.

In the system configuration Enterprise 2.0, CEMS for the experiments with the system environment is an

intranet platform. The researchers will use a content management system (Content Management System, CMS) on the intranet. The CEMS Model required Enterprise 2.0 tools to enable integration with other systems to be collaboration tools.

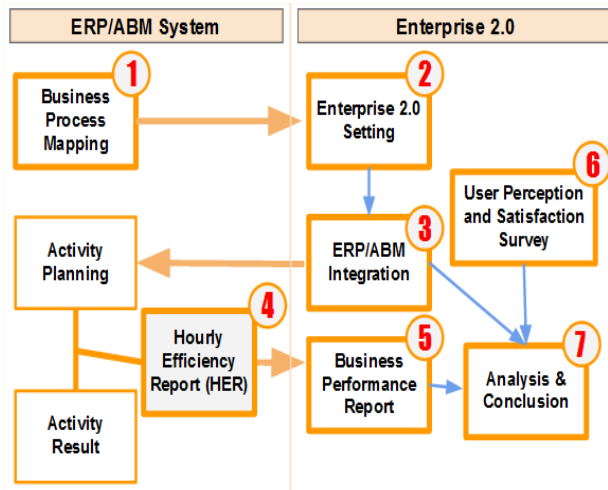


Figure 2 Methodology of Enterprise 2.0 Implementation

Component #3: ERP & ABM Integration.

ERP & ABM Integration is a link function between experimental ERP system integration of Data Transaction Linkage and ABM applications are cost profit management purposed in all concerned transaction occurred in all business processes, including the sales order, purchase order, work order, etc. Since all transactions must be linked to accounting data. So the main point of this component is repository of accounting data for ABM control. Such as report on the group financial statements, Report performance indicators per hour. (Hourly Efficiency Report)

Component #4: Hourly Efficiency Report.

The calculation of the various financial accounts of the ABM is to evaluate the performance for improving business processes and performance to minimize losses and high profit concept. The users will do the activities plan and check the activities result in this report. There are two type of this report, one is Hourly Efficiency Report of None-Production for activities that do not related to the production and another one is Hourly Efficiency Report of Production is for activities directly related to production. Enterprise 2.0 related activities ABM system with the objectives resolution of the collaboration to report performance per hour. Be used to report events such as the Share Document and share various documents in the same format, Blog and tools for communication between staff involved in the

activities of the ABM and the way in providing feedback and recognition on the team.

Component #5: Business Performance.

Business Performance Report is the first part in assessment of factors influencing success of the trial of CEMS and exploration industry with using eight business performance formulas that are described in next section 4.2.

Component #6: User Perception and Satisfaction Survey.

User Perception and Satisfaction Survey is the second part in assessment of factors influencing success of the survey to assess the satisfaction of the trial of CEMS and exploration industry. The purpose of this assess is the attitude of using the ERP/AMB system and Enterprise 2.0 in an experiment environment. The result of the survey evaluation results are described in next section 4 of Result of Proposed Prototype Model.

Component #7: Analysis & Conclusion.

Analysis and Conclusions will use the results of an experimental system in step 3 and step 5-6 as described in section 4, the analysis will focus on the analysis and discussion in business variables that contribute to the increase of the business. And the impact of implementing enterprise system involved in the experiment (CEMS) to summarize the results and the financial results and the satisfaction of the users testing the system.

4. Result of Proposed Prototype Model

There are two parts that this research had in assessment of factors influencing success of the trial of CEMS.

4.1 Result of collaborative Enterprise 2.0 implementation model

Define detail concept of hourly efficiency conceptual in measurement. This is one of business performance index. There are four main components are as below.

- Income Item
- Cost Items
- Value Added (Margin)
- Hourly Efficiency

In table 1 is format that all business units used for control their income and cost. Each business unit user

has to manage with high hourly efficiency rate and also need to do the benchmark with other business unit in the company.

Table 1 Layout of Hourly Efficiency in Main Components.

Hourly Efficiency Report (Layout)

| No. | Code | Item | Plan (unit 1kbt) | Result (unit 1kbt) | Estimated (unit 1kbt) | Ratio % |
|-----|--------|-------------------------------|---------------------|-----------------------|--------------------------|---------|
| 1 | xxxxxx | Total Income (A) | 350 | 357 | 480 | 102 |
| 2 | xxxxxx | | | | | |
| 3 | xxxxxx | Total Expense (B) | 261 | 263 | 354 | 100 |
| 4 | xxxxxx | | | | | |
| 5 | xxxxxx | Value Added(C=A-B) | 89 | 94 | 126 | 2 |
| 6 | xxxxxx | | | | | |
| 7 | xxxxxx | Total Working Hours (D) | 1,062 | 1,063 | 1,434 | 100 |
| 8 | xxxxxx | | | | | |
| 9 | xxxxxx | Hourly Efficiency Ratio (C/D) | 84% | 88% | 88% | |

The concept starts with income amount that each unit has to create any activity idea by Enterprise 2.0 means. Basically every business unit has cost expense so each unit has to control in minimum level. Margin is variance of income and expense that is calculation field. Each business unit also has to control manpower cost in minimum level. When used formula of margin divided by manpower hour will be hourly efficiency ratio of each business unit. [15]

Figure 3, it shows the outcome of 3 years Hourly Efficiency in financial measure of the case study company. Based on Absorptive Capacity framework this research approach the technology of Enterprise 2.0 embedded with ERP system then business will improve the knowledge gaining to employee and raise the skill up and finally sustain to business.[11][10]

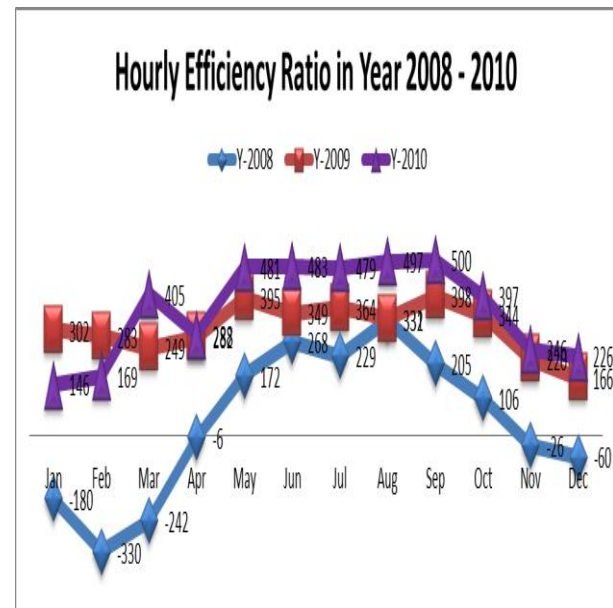


Figure 3 Image of Hourly Efficiency Improvement during 3 years data (2008-2010) of the case study company.

4.2 Assessment of factors influencing success of collaborative Enterprise 2.0 implementation model in Measurement Method

Researcher analysed and evaluated the research result with the eight business performance formulas that show in table 2. [8]

- 1.) APPE1 is a value index of manufactured goods to the total workforce. This shows the performance of each employee, compared with sales value of goods produced. The value is a measure of labor productivity in the workforce is one who can generate sales of manufactured goods to the value of my business. If the index is higher is good.
- 2.) APPE2 measure labor productivity-oriented value added. (Value-added Productivity) This index indicates the efficiency of labor, one unit of the benefits arising from the production after the costs associated if this index is higher is good.
- 3.) AP is the index of labor compensation, direct or specific parts of the plant for all costs incurred, including costs of acquisition, sale and administrative expenses, Remuneration and Establishment. It includes factory workers, Office staff and administrators. If the index is higher than the industry average will affect the performance of the business in other areas.

Analysis should be considered in conjunction with the Amount of processing per employee to compare the productivity of labor and the cost of such labor. A measure of the ability to compete on labor costs of business compared with the industry average. It is also used to measure the concentration of labor in business.

- 4.) PEAP index of total labor compensation to value added. This index is used in conjunction with the Amount of processing per employee as the employee's allocated share of employees who have been in the business of adding value. Or expenses paid to employees of the Company in the form of salaries, bonuses and benefits. Compared with the value of the employees add up together. If the index is higher. Show that the value-added activities are allocated to employees.
- 5.) EMI is the efficiency of investment in machinery and equipment is added to the index value of assets. Property, machinery and equipment. It represents an investment in assets that have the right equipment or the machine does not fully or not. If the index is less than the existing machinery used in production to generate added value lower than it should be.
- 6.) VMPE is concentrated in investments in machinery and equipment related to the machinery and equipment used in the operation of any employees that are reasonable and appropriate will depend on the type of the industry also.
- 7.) MCPV is the value of the materials produced. If the index is higher is not good. It also presents the quality raw materials from supplier, or damage from improper storage.
- 8.) LCPV is the labor compensation to value the goods index can indicate the concentration of workers in the production process. If the rise in wages could rate this higher but it's not meant to be a negative result of the operation. We should compare LCPV and APPE2. If LCPV is less than APPE2, it deemed effective in labor force growth.

Table 2. The eight business performance formulas.

| # | Acronyms | Name | Formula |
|----|----------|---|--|
| 1. | APPE1 | Amount of production per employee | (Net sales) / No. of employees |
| 2. | APPE2 | Amount of processing per employee | (Amount of production - Production cost) / No. of employees |
| 3 | AP | Amount of processing. | Amount of processing / Amount of production |
| 4 | PEAP | Personal expense to amount of processing. | Total personal expense / Amount of processing |
| 5 | EMI | Efficiency of machinery investment | Amount of processing / Machinery and equipment |
| 6 | VMPE | Value of machines per employee | Machinery and equipment / No. of employees |
| 7 | MCPV | Material cost to production value. | Material cost / Production value |
| 8 | LCPV | Labor cost to production value. | Production labor cost / Production value Amount of production per employee |
| | | NS : Net sales | PRL : Production Labor Cost |
| | | EMP : Number of employees | PCA : Amount of Processing |
| | | PRA : Amount of Production | PXT : Total Personal Expense |
| | | PRC : Production Cost | ME : Machinery and equipment |
| | | PRV : Production Value | MC : Material Cost |
| | | | |

Figure 4, it shows the outcome research of the assessment of factors influencing success of collaborative Enterprise 2.0 implementation model in measurement method by the eight formulas of the case study company. There are 5 assessments index that have high value, APPE1, APPE2, PEAP, EMI and LCPV.

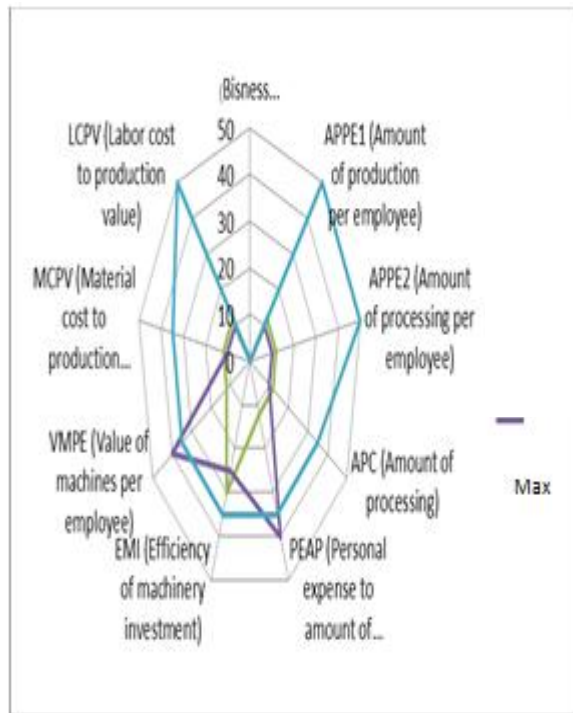


Figure 4 Result of collaborative Enterprise 2.0 implementation model with eight business performance formulas.

5. Conclusion

Based on framework of Absorb Potential Capacity to be realized, this paper approached assessment of factors influencing success of collaborative Enterprise 2.0 implementation model of manufacturing industrial in Thailand. With ABM and social media & network tools can focus in monitoring and control management in production cost.

Increasing high competitive, to reduce cost is the most way that enterprise will do within organization. This paper presents an assessment of factors influencing success with eight formulas result of management to control production cost and profit. By "Hourly Efficiency" report will provide information of income minus expense and divide by working hours in each business unit. This report will be the tool for each unit users to monitoring his profit and cost with having control concept with maximizing income, minimizing expenses and minimizing work hours. Each business can manage by Enterprise 2.0 means. By this methodology the assessment of factors influencing success, eight formulas have shown the 5 index (APPE1, APPE2, PEAP, EMI and LCPV) are high performance from experimental company.

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