

A development of evaluation model for initiatives: A study on a productivity improvement program in Thai manufacturing

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Abstract

The dynamic environment effects organizations and causes business assumptions to no longer fit with the new realities. Thus, change initiatives are required to construct new competencies. At the end of such program implementation, the top executives might put their leadership credibility at stake. The evaluation model is a strategic decision making tool, assisting top executives in systematically ranking the proposed productivity improvement initiatives effectively align with organizational strategy, and selecting the most appropriate program. This study explores the

development of an evaluation model for productivity improvement programs in manufacturing. It presents related theories, relevant researches, and comparatively empirical data of the actual, similar methodology productivity improvement program implemented in three large-scale manufacturers from various industrial sectors in Thailand, which support the design of the proposed preliminary model. Expert evaluation and opinion by questionnaires of four groups of constituencies were methods used to validate the contents of the proposed model

prior to developing the final model. The paper discusses the conceptual and research methodology in developing the evaluation model as well.

Introduction

In keeping its competitive position, an organization requires to systematically monitor and test its theory of the business in preventing the theory from becoming obsolete (Drucker, 1998). Top executives need the organization analysis, rethink its theory, and bring the organization's behavior in line with the new realities of its environment, definition of mission, and core competencies. When an organization develops or acquires new competencies through the change initiatives, its executives frequently need any decision-making tools that assist in systematic ranking and selecting the change initiatives, and evaluate the initiatives' alignment with an organizational strategy, which is the most considerably important aspect in maximizing its profits and performance.

Performance and productivity are viewed as an organization's ability to provide customer values. When describing them as ratio, they could be summed up to customer

value per resources (Gruenberg, 2004). Some aspects of performance are difficult to measure. Therefore the easiest way is to turn performance measurements out to resemble productivity measurements. From the survey report on total factor productivity of the Asian Productivity Organization revealed that Thailand's total factor productivity (TFP) growth over the last three decades, studied on the basis of the growth accounting method developed by Professor Oguchi, has been continuously declining, considering only aggregated capital stock and total employment as productive factors (Asian Productivity Organization, 2004). The Office of Industrial Economic has reported the declining tendency of Thailand TFP growth in the 2002 survey on annual industrial outputs (Ministry of Industry, 2005). Additionally, the IMD World Competitiveness Yearbook 2006 has scored Thailand for its overall competitiveness ranking in the 32nd from the total of 61 countries and regional economies. Thailand productivity and efficiency, exhibited in the 48th ranking, is being concerned for business efficiency (International Institute for Management Development, 2006). Since productivity is one of the fundamental

variables that govern economic production activities (Singh et al, 2000; Tangen, 2005) and the impetuosity of the globalization compel every country on competition, Thai manufacturers must therefore focus on their productivity improvement strategies.

Competitiveness of a country depends on the competitiveness of the organizations within its boundaries (Shurchuluu, 2002). In order to maintain the organization competitiveness and sustainability, an organization needs to enhance its management effectiveness by developing its competitive assets and processes through a productivity improvement program (PIP). Making decision on implementing any PIP challenges the top executives. Such execution is organization's substantial investment in tangible and intangible assets, especially time program consumes. By mismanagement, the result might put the executives' leadership credibility at stake (Daft, 2001).

It is apparently that a management tool is needed for this crucial non-programmed decision. The researchers then raise the questions up concerning the critical success factors (CSFs), key significant indicators (KSIs), and criteria, which reflect both

effectiveness and efficiency on any PIPs implemented in an organization. Moreover, what would the PIP evaluation model for manufacturing look like? In recognition of the problems, the study is divided into 2 parts; in the first part, the researchers have conducted the study on related theories and researches to identify CSFs and KSIs of the PIPs, including the exploitation of empirical data from the actual, similar methodology of PIP implemented, by one of the researchers, in three large-scale manufacturers in Thailand. The researchers have utilized the competing values framework (CVF) as a measurement tool to verify those empirical data with CVF's criteria and design the proposed preliminary model. The expert evaluation and opinion method is used in the second part to validate the contents of the proposed model. The research objective is to develop a model as a management tool for evaluating the proposed improvement initiatives and supporting the selection process of what would be beneficial to the organization.

Theory of the business and productivity initiatives

Significantly that every organization is built from the assumptions that shape the

organization's behavior and business discretion. The success formula of an organization's operation run under this principle is what Drucker called "the theory of the Business - TOB" (Drucker, 1998). This principle is based on three assumptions; (1) environment including markets, customers, technology and society it operates in; (2) specific mission; and (3) core competencies for maintaining its leadership.

Since a hypothesis of TOB explicitly defines the persistent changes, the theory then is built in "the ability to change itself". All three assumptions must fit reality and align with each other. When one is invalidated by changes, the theory eventually becomes irrelevant. Everyone in the organization must "know and understand" its own TOB and the organization needs to constantly test the theory. Drucker implied that cures are hard work, being conscientious, and a serious rethinking of the theory with the top executives' decisive decision.

In some circumstance, the change initiatives are required to fit its TOB with realities. Developing or acquiring new competencies support organization in maintaining its leadership. For organization

sustainability, the continuous and productivity improvement is essential (Khan, 2003). Implementing a PIP requires a process similar to the organization development process (ODP) model, which has been modified from the action research model and can be comparable to the PDCA model (McLean, 2006). The interrelated eight-step ODP model are stated; (1) the entry is a step that top executives navigate their decisions on PIP; (2) the start-up is a step the task forces and resources are put in place; (3) the assessment and feedback; (4) the action plan for PIP plans and schedule; (5) the implementation is a step that intervenes in operations and paradigms through PIP's methodology; (6) the evaluation is a step to define variances in context, inputs, processes and outputs of PIP in order to select the alternative outcomes; adoption, corrective action, cease or separation; (7) the adoption is a consequence from step 6; and (8) the separation is a consequence from step 6 or the PIP completion.

In this study, we evaluate the actual PIP data of purposive samplings from step 3 of ODP model onwards. The purposive samplings' top executives have identified their priorities in productivity improvement

strategies by utilizing PIP as an intervention. The PIPs such as TQM, Six Sigma, and Lean have some similarities and are treated to enhance organizational competitiveness by improving their management efficiency and effectiveness in assets and processes. Organizations therefore gain their benefits when combine and align these approaches, for they are complementary with each other. These three programs are alike in their origin, methodologies, tools and effects but different in their main theory, approach, and criticism (Andresson, et al, 2006). The CSFs for the TQM, Six Sigma, and Lean implementation derived from the empirical researches (Khan, 2003; Antony and Banuelas, 2002) had been identified as following: (1) top executives' acceptance on programs' philosophies effecting their involvement and commitment; (2) organizational infrastructure; (3) process improvements and alignment to strategy; (4) customer-driven cultural; and (5) systematic approaches with KUSA (knowledge, understanding, skills and ability) team.

Productivity and productivity improvement

Arguably, the productivity is one of the most important basic variables governing economic production activities (Singh et al.,

2000). Its importance is often reduced by those who influence the production processes. The possible cause is the lack of any simplified meaning and common agreement of what the productivity actually represents (Tangen, 2005). Prior to identifying its definition, we would firstly discuss the systems model and its components relationship.

The simple systems model is composed of three interrelated components; resources as inputs, activities occurred in the processes, and results as outputs. Every system generates result. Whenever an activity takes place, resources are utilized (McGee, 2006). Whereas effectiveness is perceived as the qualitative measures of how well an activity produces a result, efficiency with dynamic relationship between resources and results, represents the quantitative measures and reflects how well the resources are utilized to accomplish the results. The productivity will be high, if both effectiveness and efficiency values are high. (Gruenberg, 2004). If the balances between resources and activities, and activities and results are created within the system, an optimum balance will occur. McGee calls this optimum balance “**productivity**”. The machines, tools or

techniques have little to do with the productivity; in fact, the root cause is the basic attitudes of managers and employees. Thus, productivity is an attitude; it is employees' motivation that controls their outputs (Drucker, 1986). Productivity can be viewed as an organization's ability to provide customers' values and lower unit labour cost. Shurchuluu (2002) identifies the two halves of an organization competitiveness formula, these are; competitive assets, a task of optimizing the assets or resources utilization; and competitive process, effective management of processes, including quality, speed in production and delivery, flexibility, global standardization, and innovative products and services. The productivity improvement is achieved when both competitive assets and processes are effectively managed and transformed. Productivity in our study is "the balance between efficiency and effectiveness in the processes that transform its resources to optimal results, and create value-added to products and services. These attributes come from the employees' attitudes".

Performance measurement and management

From the last visit with Drucker, he demonstrated his vision of leadership that top

executives who commit to effectiveness and efficiency lead an organization with high degree in spirit of performance (Hesselbein and Goldsmith, 2006). The executive skills, practices of effectiveness, and tasks are accumulated through knowledge and experience. Nevertheless, the leadership principles and practices must be learnt. An organization subsequently requires the leadership principles to formulate its purposes and pursue its performance objectives. In order to successfully implement an organization's TOB and outperforming, it is needed to combine all -the executive skills, tasks, and practices- into principles of effectiveness.

Many empirical researches on establishing the performance measurement for an organization of the future have come up with a multidimensional scorecard labeled the "Balanced Scorecard". This scorecard measures an organization's performance from four distinctive perspectives; financial, customer, internal process, and learning and growth (Kaplan and Norton, 1996). These four perspectives are link together in a chain of cause-and-effect relationships for the objectives of enhancing and aligning intangible assets, which lead to performance of process

improvement, and then drive success for organization's constituencies (Kaplan and Norton, 2004). The balance indicates the equilibrium between short- and long-term objectives, between lagging and leading indicators, between external and internal performance perspectives, and between financial and non-financial measures (Kaplan and Norton, 1996). Kaplan and Norton (2006) identified in five key management principles for aligning an organization's measurement and management systems to strategy; (1) mobilize change through executive leadership; (2) translate strategy into operational terms; (3) align organization to strategy; (4) motivate to make strategy everyone's job; and (5) govern to make strategy a continual process.

To improve an organization's performance, it is evident that the combination of the performance-driven behaviour and the regular use of the performance management process enhance the results (de Waal, 2004). Hypothetically, the efficient and effective steering and control of the organization during the performance management process is achieved by; (1) formulate mission, strategy and objectives; (2) translate them into operations; (3) measure them with key

performance indicators (KPIs) and the balanced scorecard; and (4) take corrective actions. De Waal's performance management analysis reflects the system from the "structural side" and the "behavioural side". The structural side refers to the formation of KPIs, and measurement systems. Organizational members are the behavioural side. To establish a performance-driven organization, it is needed in principle to draw attention of both sides. From his researches, de Waal grouped 5 categories of the performance-driven behavioural factors called areas of attention consisting of; (1) Organizational members' understanding; (2) positive attitude; (3) alignment; (4) culture; and (5) control focus.

The global application of performance measurement and management evaluation model is International Institute for Management Development (IMD). The abilities of the participative nations in creating and maintaining their environment for the competitiveness of their enterprises' sustainability were annually scored and reported for nations' competitiveness rankings in the IMD World Competitiveness Yearbook. The IMD methodology categorizes the national

environmental indicators into four main factors; economic performance, government efficiency, business efficiency, and infrastructure. Each main factor is cascaded into sub-factor level, and criterion level. The standard deviation method is used as statistic in evaluating the competitiveness rankings of 61 countries and regional economies (IMD, 2006). Additionally, the model for corporate performance excellence such as Malcolm Baldrige National Quality Award (MBNQA), European Foundation for Quality Management (EFQM), Deming Prize, is an enterprise-level evaluation (National Institute of Standards and Technology, 2006). The Foundation of Thailand Productivity Institute has utilized the MBNQA criteria for Thailand Quality Award as well.

Prior to measuring performance, we must determine what to measure. Concerned questions are; what do the executives try to accomplish and what are their objectives? It was soon realized that we are not supposed to select the measures ourselves because all criteria are already used in organizations. Once executives agree on their goals and objectives, the selection of what to measure then become simple (Kaplan and Norton, 2004).

Organizational effectiveness and competing values framework

Organization effectiveness (OE) is conceptually complex and being the central theme in organization theory, which clarifies the proper structure that lead to OE. Since 1946, Etzioni has defined it as a degree to which an organization realized its goals. It is still arguable that an organization's success is survival (Robbins, 1990). Until early 1970s Campbell identified multiple criteria, purporting to measure OE as different things to different people. There is almost unanimous agreement today that OE requires multiple criteria, that different organizational functions have to be evaluated using different characteristics, and that OE must consider both means (process) and ends (outcomes). The study of OE has taken four approaches for its definition; (1) the goal-attainment approach defines OE as the ends; (2) the systems approach focuses on means; (3) the strategic-constituencies approach identifies OE as satisfying the demands of those constituencies; and (4) the competing values approach is based on competing values of the diverse evaluators.

The Competing Values Framework (CVF) was developed initially from research

conducted on the major indicators of OEs (University of Memphis, 2006). The concept identifies that criteria valued and used in assessing an OE depends on the constituencies the assessor represents. (Robbins, 1990). Based on statistical analyses of a comprehensive list of effectiveness indicators, Quinn and Rohrbaugh have discovered three sets of competing values; (1) organization leadership focus between internal on people and external on productivity and task; (2) organization preference structure of flexibility and change versus stability and control; and (3) organization means versus ends. These sets of values can be illustrated as a three dimensional diagram and when combining the first two sets with the means and ends dimension, then creates four diverse models which elucidate the definition of OE (as show in figure 1). The four models are; (1) human-relations model (people and flexibility); (2) open-systems model (flexibility and organization); (3) rational-goal model (organization and control); and (4) internal-process model (people and control).

The application of CVF is useful for identifying the variety approaches of organizational phenomena such as quality,

effectiveness, and leadership and human resources managers' roles. The CVF was formulated on the basis of very fundamental assumptions, about how organizations work and are managed. Such framework accurately describes other aspects of organizations in many researches on the organizational leadership, organizational effectiveness, culture change, TQM, and human resources management (Cameron and Quinn, 2006). From their study, Quinn and Cameron have illustrated the four major culture types, which are; (1) clan culture focuses on internal maintenance with flexibility, concern for people, and sensitivity to customer; (2) adhocracy culture focuses on external positioning with a high degree of flexibility and individuality; (3) market culture focuses on external positioning with a need for stability and control; and (4) hierarchy culture focuses on internal maintenance with a need for stability and control.

The researchers endeavor to utilize the CVF concept in determining the program's effectiveness, an achievement level of the PIP implemented in the organizations, which have competing values on diverse dimensions; structural, leading, and means and ends.

Context-Input-Process-Product Evaluation (CIPP)

Evaluation is the determination of a thing's values (Worthen and Sanders, 1987). Evaluation uses investigation and judgment methods, incorporating with standardization, either by relative or absolute for judging quality, collecting relevant information, and applying the standards to determine quality. Based on the difference in philosophical ideologies, in 1970s House has grouped the evaluation approaches into two categories; these are objectivism versus subjectivism, and utilitarianism versus intuitionism/pluralism.

In 1969 Stufflebeam and colleagues developed the decision-making evaluation, based on the concepts of systems theory, then became the CIPP evaluation model (Context-Input-Process-Product evaluation) in 1971 (Gredler, 1996). The CIPP model represents a systematic decision-oriented evaluation, purposing to delineating, obtaining, and

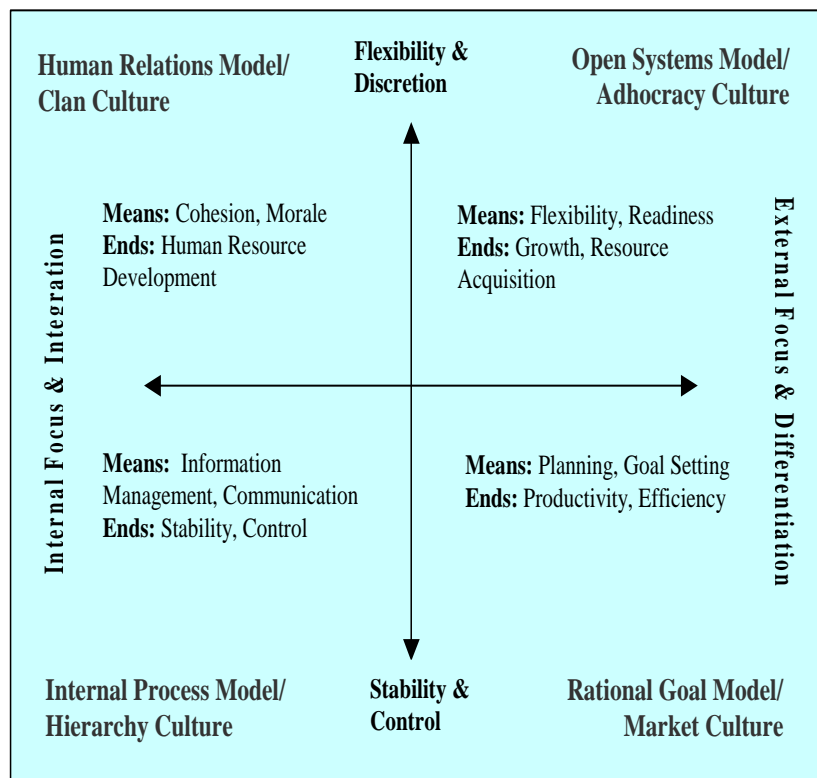
providing useful information for judging decision alternatives (Worthen and Sanders, 1987). Evaluation model is a management decision-making tool that simulates an evaluation system, modifying an abstract concept to a concrete modeling. The CIPP evaluation has 4 components consisting of;

(1) Context evaluation identifies initiative change. We put TOB as the context in the framework;

(2) Input evaluation identifies appropriate approaches to change. We identified 5 CSFs, each linked with its own pair of cause-and-effect relation indicators sum up to 10 KSIs, as inputs in the framework;

(3) Process evaluation focuses on program's efficiency. The criteria, identified from the empirical CVF researches and verified with purposive samplings, are put in the framework; and

(4) Product evaluation measures the program effectiveness.



the definition of organization effectiveness

Research Methodology

This action research, known as the program evaluation is comprised of 2 parts; the design of preliminary evaluation model and the content validation of model. The related theories and researches including the empiricism from the purposive samplings, 3 large-scale manufacturers each with eight-to-ten-month, operation/behavior improvement program, have been investigated in the first part, to identify CSFs, KSIs and criteria of the PIPs, which represents the research hypothesis

and are key ingredients of the proposed preliminary model. The researchers have introduced CIPP evaluation as a framework of the preliminary model (as shown in figure 2), and utilized the CVF as a measurement tool to identify the criteria of the proposed preliminary model. The z-score is used as statistic, measuring the relatively different positions of the purposive samplings' data processing. To validate the contents of the proposed model prior to developing the final

model, the method of expert evaluation and opinion by using the questionnaires of four-group constituencies have been taken on; these are Group No.1 expert panel; Group No.2 the large-scale manufacturers scholars; Group No.3 industrial representative organizations or

government agencies; and Group No.4 are the consulting executives. The research process, which focused on developing the evaluation model, can be exhibited in figure 3.

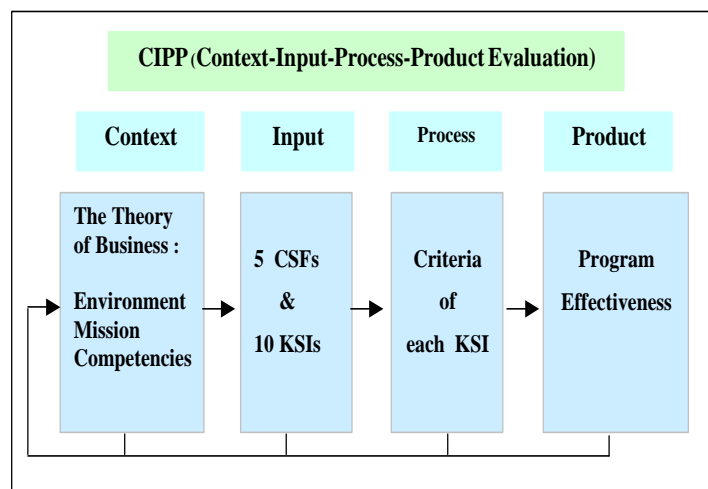


Figure 2. CIPP integrated framework for research hypothesis on development of Productivity Improvement Program Evaluation Model for manufacturing

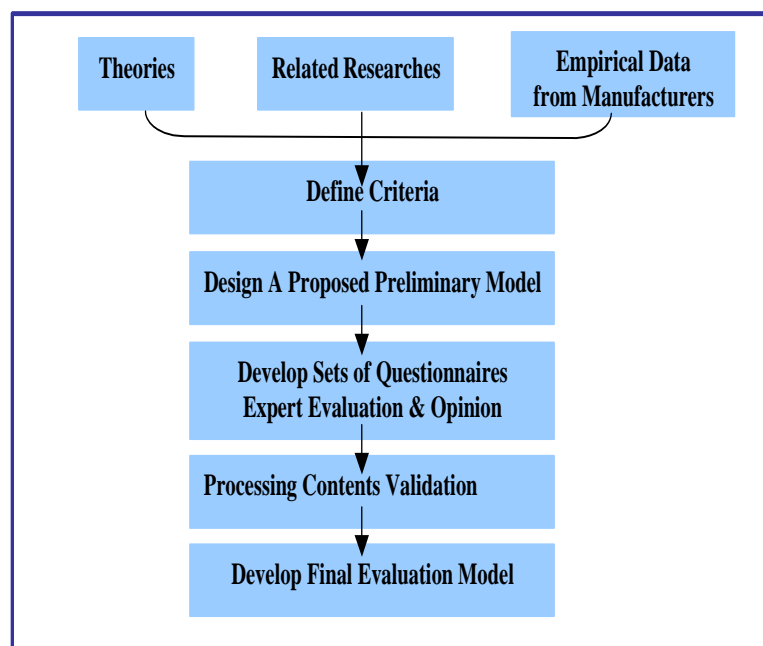


Figure 3. Development process of Productivity Improvement Program Evaluation Model for manufacturing

Proposed Model

As seen in the CIPP integrated framework, three elements in the TOB formulate an organization's circumstance, which will be evaluated in the stage of context evaluation. An organization's TOB influences its business purposes and productivity improvement strategies. The identifications of 5 CSFs and 10 KSIs, which have cause-and-effect relationship, have been substantially

supported by literatures, researches survey and the researchers' empiricism. Incidentally, the comparatively data from actual program implementation of these purposive samplings will be verified with CVF's criteria, and analyzed for exhibiting the program effectiveness of each individual purposive samplings. The research hypothesis has been proposed as in figure 4.

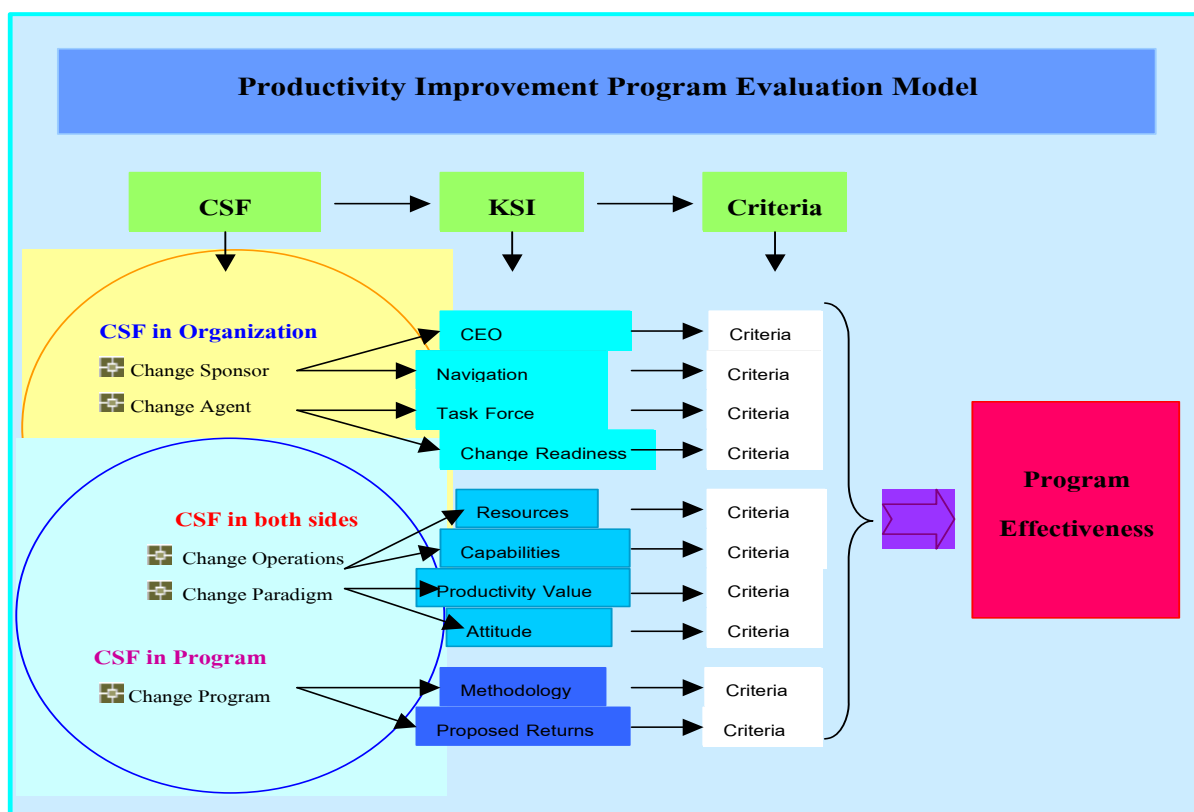


Figure 4. The research hypothesis and the proposed preliminary model

Conclusion

The productivity improvement strategies are essential for global organization survival, not only Thai manufacturers. At the current stage of investigation, there is no specific application model for productivity improvement program alignment and evaluation disseminating in academic. In practice, the top executives' decision-makings are regularly based on; utilizing needs assessment, organization diagnosis, and feasibility study. Some traditional organizations still rely on their executives' instincts. With our endeavours in years of literature survey, long hours of advisors' consultation, and professional discussions with industrial clients, then the model concept emerges. The researchers are indebted to many top executives, their organizations and support in permitting to use their programs' data for this study. We have drawn out three organizations from them, and with our professional ethics; their information and data will be strictly kept in confidence.

Next step, in the development phase of the preliminary proposed model, the researchers will use the CIPP integrated

framework (figure 2) to evaluate criteria of the each purposive samplings' actual implementation data and demonstrate the individual program effectiveness. The results will be used to design the preliminary proposed model. To validate the contents of the proposed model, the researchers use expert evaluation and opinion method. The final evaluation model is the ultimate outcome of this study. The researchers predict that most effective program occurs when it aligns with organization's strategy and minimizes gaps of organization future demands.

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