

An Advanced Approach to People Capability Maturity Model

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Abstract: This paper involves identifying how the people management is done in software companies in India in the recent years by analysing the key process areas of People Capability Maturity Model. From our survey along with study of the principles of Total Quality Management, an approach to people management is put forwarded to rectify people capability management. People capability management is a hugely important part of putting together and managing high performance software engineering people. People Capability Management has known to make IT people more responsive, more productive, leaner and more efficient. People capability management has brought revolution to the IT sector after its introduction by which companies are now able to maintain a healthy relationship with all its employees, thereby encouraging them to work efficiently with less stress and achieve desired goal within stipulated time.

Keywords: People, Management, Survey, P-CMM, TQM, IT sector.

I. INTRODUCTION

Human resource function is the most important element in the organizational structure of an IT industry. Different human resource models are being suggested to the companies for sustainable development. Intelligence and competencies of workers have become crucial due to the rapid changes in the global and regional markets [1].

The People Capability Maturity Model (PCMM) provides a roadmap and a set of guidelines sequenced with five stages for implementation. Besides, each progressive level of P-CMM clearly declares unique transformation with powerful practice for attracting, developing, organizing, motivating, and retaining its workforce, establishes an integrated system of workforce practices that mature through increasing alignment with the organizations' business objectives, performance, and changing needs. The maturity levels are decomposed into several key process areas that indicate the areas of an organization should focus on to improve its workforce capability. Each key process area is described in terms of the key practices that contribute to satisfying its goals. The key practices describe the infrastructure and activities that contribute most to the effective implementation and institutionalization of the key process area the merits of applying PCMM depends on the achieved level of maturity. The standards followed provide an objective evaluation of the HR function of the company [2].

The Total Quality Management (TQM) emphasizes upon the HR function giving importance to employee empowerment and involvement to enhanced productivity and cost effectiveness. Empowerment is more concerned with giving the employees decision-making opportunity. This process helps the people to give their best results while they enjoy what they do. It is a continuous process with continuous improvement and assigns the responsibilities to everyone in the industry. TQM is inherited in many other models and processes, establishing a culture of open communication and participation without breaking any barriers [3].

II. THE PEOPLE CAPABILITY MATURITY MODEL

The People Capability Maturity Model (PCMM) is an evolutionary framework that works continuously to improve human resource development and management. The focused set of practices called workforce practices that it incorporates guides to make lasting gains in the performance and competitiveness of organizations' workforce. The People CMM's primary objective is to improve the capability of the workforce in different maturity levels.

The People CMM was first published in 1995 and updated in 2001. The Second Edition updates informative material within the model, and provides new information regarding the global use of the People CMM. Since its first release in 1995, the People CMM has successfully guided workforce improvement programs in IT industries globally.

The PCMM have five maturity level unlike other CMMs and each level have specific process areas. They are as follows [1]:

*Maturity Level 1: Initial:-*In the Initial Level, there are no process areas. Workforce practices tend to be traditional or inconsistent but organizations perform processes that are described in the Maturity Level 2 process areas which may be

legally mandated. Organizations that do not achieve the goals of each of the Maturity Level 2 process areas are performing as Maturity Level 1 organizations.

*Maturity Level 2: Repeatable:-*In the Managed Level, the discipline such as staffing, management of performance, training, compensation criteria are monitored by the managers. Work commitments of people are considered by ensuring development to manage skills and performance at the unit level. The process areas here include Staffing, Communication and Coordination, Work Environment, Performance Management, Training and Development, and Compensation.

*Maturity Level 3: Defined:-*In the Defined Level, the organization identifies and develops the knowledge, skills, and process abilities that constitute the workforce competencies. The organization develops a culture of professionalism based on well-understood workforce competencies and develops the capability to manage its workforce as a strategic asset. The process areas here include Competency Analysis, Workforce Planning, Competency Development, Career Development, Competency-Based Practices, Workgroup Development, and Participatory Culture.

*Maturity Level 4: Managed:-*In the Managed Level, the organization quantifies and manages the capability of its workforce and competency-based processes, in addition to exploiting the opportunities afforded by defined workforce competencies. The organization creates a culture of measurement and exploits shared experience and has the capability to predict its performance and capacity for work. The process areas here include Competency Integration, Empowered Workgroups, Competency-Based Assets, Quantitative Performance Management, Organizational Capability Management, and Mentoring.

*Maturity Level 5: Optimizing:-*In the Optimizing Level, everyone in the organization is focused on continuously improving his or her capability and the organization’s workforce practices. The organization creates a culture of product and service excellence and continuously improves its capability and deploys rapid changes for managing its workforce. The process areas here include Continuous Capability Improvement, Organizational Performance Alignment, and Continuous Workforce Innovation.

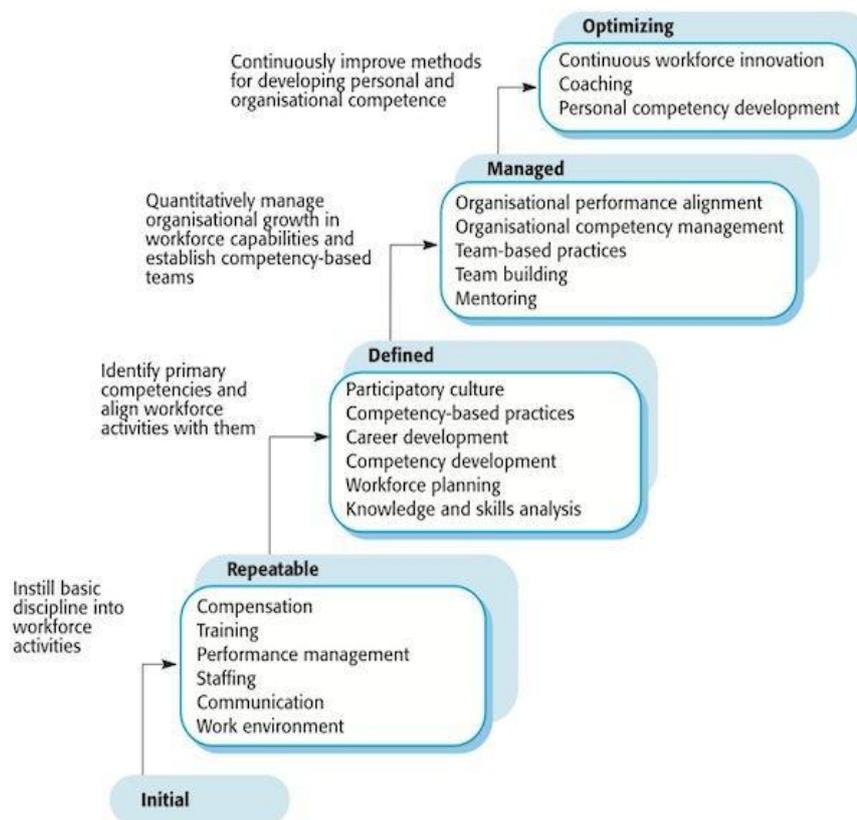


Fig. 1.1: Maturity Level of P-CMM [4].

III. TOTAL QUALITY MANAGEMENT

Total Quality Management (TQM) is a management approach for an organization, centered on quality, based on the participation of all its members and aiming at long-term success through customer satisfaction, and benefits to all members of the organization [5]. To make more ideal task-oriented decisions based on workers commitment and motivate participative organizational culture, rather than a traditional authoritarian 'top-down decision making', TQM provides and facilitates the process of team building. The effective solution of problems can be solved along by open communication, people involvement and development. Team-working act as a mechanism of continuous improvement and as a type of work organization is recommended by most quality pioneers. TQM requires the implementation of a highly committed HR strategy that emphasizes quality, flexibility and integrity [3].

The principle of TQM includes [6]:

Customer focus: The customer ultimately determines the level of quality. No matter what an organization does to foster quality improvement—training employees, integrating quality into the design process, upgrading computers or software, or buying new measuring tools—the customer determines whether the efforts were worthwhile.

Leadership: Leaders at all levels establish unity of purpose and direction and create conditions in which people are engaged in achieving the organization's quality objectives. Creation of unity of purpose and direction and engagement of people enable an organization to align its strategies, policies, processes and resources to achieve its objectives

Engagement of people: All employees participate in working toward common goals. Total employee commitment can only be obtained after fear has been driven from the workplace, when empowerment has occurred, and management has provided the proper environment. High-performance work systems integrate continuous improvement efforts with normal business operations. Self-managed work teams are one form of empowerment.

Process approach: Consistent and predictable results are achieved more effectively and efficiently when activities are understood and managed as interrelated processes that function as a coherent system. Understanding how results are produced by the system enables an organization to optimize the system and its performance.

Improvement: A major thrust of TQM is continual process improvement. Continual improvement drives an organization to be both analytical and creative in finding ways to become more competitive and more effective at meeting stakeholder expectations.

Evidence based decision making: In order to know how well an organization is performing, data on performance measures are necessary. TQM requires that an organization continually collect and analyze data in order to improve decision making accuracy, achieve consensus, and allow prediction based on past history.

Relationship management: It is an approach to manage a company's interaction with current and potential customers. It uses data analysis about customers' history with a company and to improve business relationships with customers, specifically focusing on customer retention and ultimately driving sales growth.

IV. METHODOLOGY

A qualitative survey of the key process areas of People Capability Maturity Model in Indian IT industry is done. Analysis of the survey gives a proper insight into the processes followed and different features they can be classified into. Total Quality Management is a management approach centred on quality [5]. The principles of TQM are studied while proposing the new approach.

V. PROPOSED APPROACH

From our survey of some software companies of India, we have analysed how people capability management is done in the companies and what roles of the organization exercise more to make people capability management successful and have proposed a successful methodology in this semester by successfully implementing all the features it needs to be suitably applicable for all software companies to have better people capability management in them.

A. Shortcomings of P-CMM

Since P-CMM is so widely used it is important that we must understand the disadvantages of it so that we will be able to determine whether it is the best fit for project deliverable.

The People Capability Maturity Model does come with some drawbacks. One of which is that when organizations use P-CMM, they look at each level as a target. They make their goal to reach the next level up. This can be a dangerous

thought because if you become fixated on reaching the next level, you begin to lose perspective and forget that the real goal is to actually improve the work processes.

Similarly the PCMM does not specify a particular way of achieving those goals. In order to achieve them one needs to think in a flexible way. The goals will only be achieved if the organizations processes are taken into account, as each organization is different so the steps needed for process improvement will be also different. Just because one organization follows the rules set by the P-CMM it does not guarantee that it will be successful as there are also other factors involved in it.

Another disadvantage is that PCMM only helps if it is put into place early in the software development process. For example, if there is a process that is in a crisis then CMM will not help overnight. It can't be used as an emergency method of recovering from a difficult position.

Finally, PCMM is concerned with the improvement of management related activities. Whilst this is a big issue in the software development process it is not necessarily the most important thing to look at. Improved quality of code may be a vital issue in the context of software.

B. Approach

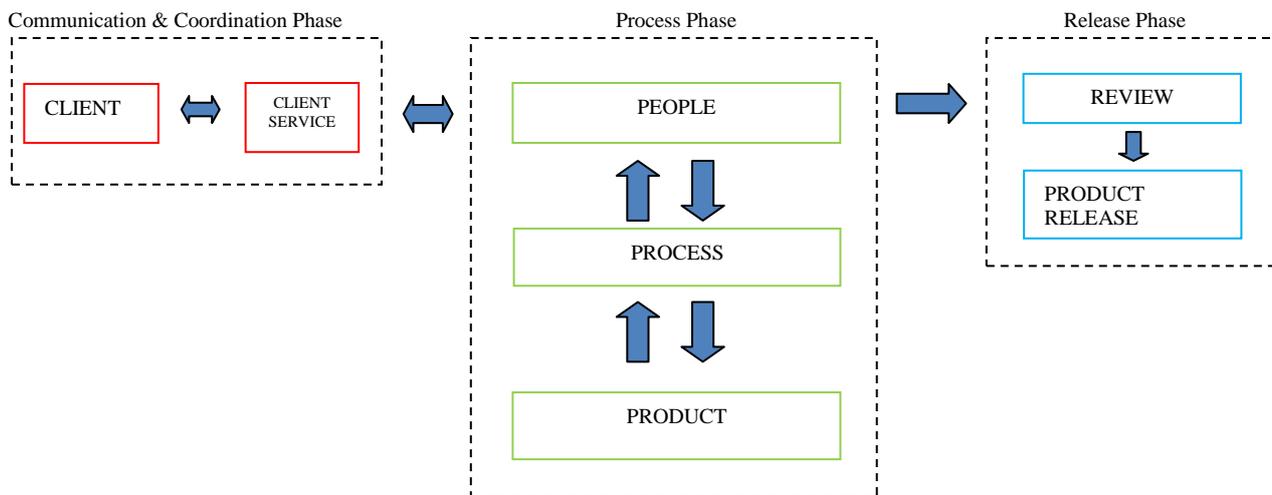


Fig .1: Proposed Approach

C. Description of Approach

1) Communication and Coordination Phase:

In the communication and coordination phase, the client will first of all interact with the customer service regarding the features of the product and discuss the terms and conditions of the company. The customer service will provide feedback to the client regarding the feasibility of the product. And the product is practically feasible the customer service will further discuss with the client about the cost, time and resources that will be required for the development. The approach will also provide flexibility to the client if he or she wants any additional changes, and can directly communicate with customer service regarding the additional features the customer wants.

In this phase a team of dedicated people namely Customer Service will be there 24*7 active for assisting and receiving customer directions and solving them as soon as possible.

2) Process phase:

In this phase, the main process comes into action. This phase contains three stages with people in the initial phase. The initial phase is divided into the following processes:

- a. Process-centered staffing is done to establish a formal process by which committed work is matched to unit resources and qualified individuals are recruited, selected and transitioned into assignment according to the process requirements.

- b. Training to is given a primary focus so as to remove the gap between the current skills of each individual and the skills required to perform their assignment qualitatively.
- c. High-performance work systems are maintained to balance expenditures on resources and environment with justifications based on the work being performed.
- d. Strategic planning or strategic management is to be done to establish objectives related to committed work against which unit and individual performance can be measured, to discuss performance against these objectives, and to continuously enhance performance.
- e. Communication between personnel and coordination skills need to be developed to provide a foundation for the structured development of workgroups at higher levels.
- f. Remunerations based on their contribution and motivations to personnel so they get motivated to improve their quality of work, must be offered.

The second phase begins with the management of the processes. The management phase is distributed in the below mentioned criteria:

- a. Total employee involvement is important for all employees to participate in working toward common goals. Self-managed work teams are one form of empowerment.
- b. Decision making is to be done accordingly so that business activities are performed as per the required outcome.
- c. Business performance must be monitored and communicated continuously so that no any team deviates away from the desired goal. Responsible individuals are required to manage team performance and status of the work.
- d. Continual improvement is required to improve the quality of workforce. Finding ways to be more competitive and creative to effectively increase the quality of product.
- e. It is ensured that all workforce practices are based in part on developing the competencies of the workforce.

The final phase in the Process Phase is the strategic and systematic approach to final product.

- a. Workgroups that were assigned are empowered so that the product release is not delayed and the work is done in the given period of time. The purpose is to invest workgroups with responsibility and authority to determine how to conduct their business activities most effectively.
- b. Responsible individuals are continuously encouraged to make improvements to their performance of workforce activities.
- c. A group is assigned responsibility for coordinating continuous improvements to the organization's workforce practices.
- d. Individuals are engaged in learning activities to improve their personal work processes.
- e. Workgroups focus on improving the capability and performance of their operating processes by continuously improving the integration of the personal work processes performed by workgroup members.

3) Release phase:

During this phase of the project, the product is prepared for actual release for the customer. Overall testing is done to check whether the product is up to the mark or not. Product tester will check if there are any errors or defects in the product ensuring safety by making product go through different tests and quality check. If it passes all the tests, the product will further forwarded to the project leader, who will give the green signal for the product to be released.

REFERENCES

- [1] B. Curtis, W.E. Hefley and S. A. Miller, People Capability Maturity Model (P-CMM), Version 2.0, Software Engineering Institute, 2009.
- [2] Y.C. Chen, K.C. Hsieh and M.T. Wu , The Study of Second Level of People Capability Maturity Model on the Industrial Control Industry in Taiwan, vol. 19, 2012.
- [3] D. Sangeeta, PCMM: A New Paradigm in TQM and Human Resources, Foundation for Organizational Research & Education (2010). [Online]. Available: <http://www.freepatentsonline.com/article/Abhigyan/227355993.html>
- [4] I. Sommerville, Software Engineering, 6th Edition, Chapter 22, Addison-Wesley , 2000.
- [5] A.Alhassan, W.Alzahrani, A.AbdulAziz, Total Quality Management for Software Development, International Journal of Computer Applications (0975 – 8887) Volume 158 – No 5, January 2017 38.
- [6] Quality Management, Wikipedia. [Online]. Available: https://en.wikipedia.org/wiki/Quality_management