Chapter VII

SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSION

The chapter is organized by the researcher in the following manner:

- Findings of the research
- Recommendations based on the study
- Future research directions and
- Conclusion

7.1 FINDINGS OF THE RESEARCH

The findings of the research are organized in the following manner:

1. Findings related to the profile of the respondents
2. Findings related to PCMM level key process areas and key practices
3. Findings related to the impact of PCMM on organizational level
4. Findings related to the problems of PCMM implementation
5. General Findings

7.1.1 Findings related to the profile of the respondents

1) Among the respondents considered for the study, 11.8 percentages of the respondents are team members, 73 percentages of the respondents are in the category of team leaders/project managers and 15.2 percentages of the respondents are human resource professionals.
2) Majority of the respondents of 39.9 percentages are having total experience of 6-8 years. 34.5 percentages of the respondents are having 4-6 years of total experience. 13 percentages of the respondents are having the highest experience category of above 8 years and 12.5 percentages are having experience of 2-4 years.

3) Majority of the respondents of 55.4 percentages are having experience of 2 -4 years in the current organization. 24.6 percentages of the respondents are having less experience of 0-4 years in the current organization. 19.1 percentages of the respondents are having the experience of 4-6 years in the current organization. Only 0.8 percentages of the respondents are having above 8 years of experience in the current organization.

4) Majority of the respondents of 42.6 percentages are having experience of 1-3 years in the PCMM level organization. 34.5 percentages of the respondents are having experience of 3- 6 years in the PCMM level organization. 16.6 percentages of the respondents are having less than 1 year experience in PCMM level organization. Only 6.3 percentages of the respondents are having above 6 years of experience in the PCMM level organization.

5) Majority of the respondents of 48.7 percentages are having experience of 1-3 years in the Non-PCMM level organization. 28.4 percentages of the respondents are having experience of 3- 6 years in the Non-PCMM level organization. 17.3 percentages of the respondents are having less than 1 year experience in Non-PCMM level organization. Only 5.6 percentages of the respondents are having above 6 years of experience in the Non-PCMM level organization.
7.1.2 Findings related to PCMM level key process areas and key practices

7.1.2.1 Findings common to all PCMM level key process areas and key practices

1) The designation of the respondents has no impact on understanding of PCMM Level 2 Key practices. Irrespective of the position held in the organization, most the respondents have understood the level 2 key practices.

2) The designation of the respondents has no impact on understanding of PCMM Level 3 Key practices. Irrespective of the position held in the organization, most the respondents have understood the level 3 key practices.

3) The designation of the respondents has impact on understanding of PCMM Level 4 Key practices. The position held in the organization has influence on the understanding of the level 4 key practices.

4) The designation of the respondents has impact on understanding of PCMM Level 5 Key practices. The position held in the organization has influence on the understanding of the level 5 key practices.

5) There is a significant association between experience of the respondents in the PCMM organization and satisfaction of awareness and training given by the organization about all PCMM levels. These two variables are strongly associated. Experience of the respondents in the PCMM organization plays a vital role in their satisfaction of awareness and training given by the organization about all PCMM levels.

6) There is a significant association between experience of the respondent in the PCMM organization and agreeability about the applicability of PCMM. Experience of the respondent in the PCMM organization plays a role in their agreeability about the PCMM applicability.
7) Majority of 83.5 percentages of the respondents have given the reason for applicability of PCMM is that the model is systematic.

8) There are differences between the level of satisfaction of the respondents in work load, compensation, training, career development, work environment, promotion, performance appraisals and communication in PCMM level and Non PCMM levels and level of satisfaction of these factors in PCMM level is greater than satisfaction about Individual factor in Non - PCMM level.

9) More than 90 percentages of respondents has accepted that the documents for staffing procedures, performance objectives, performance evaluation and improvement, compensation policies, workforce competency descriptions and career promotion are available in PCMM organization.

10) For level 2 and level 3 documents, the unawareness is very less in percentage. But for level 4 and level 5 documents such as workforce competency development, Competency Based Assets (Skills, Knowledge and Experience) and Quantitative Performance Records, the opinion of respondents as not aware are 23.9, 35.3 and 54.1 respectively.

11) There is a correlation between the satisfaction of awareness and training about all PCMM levels and overall satisfaction about PCMM. There is a positive correlation and these two independent variables are highly correlated. If the satisfaction about awareness and training about all PCMM levels is increased, the Overall satisfaction about PCMM will also be increased.

12) Based on the respondents’ general attitude about PCMM model, the respondents are classified in to 2 clusters. The general attitude of the respondents in cluster 1 and 2 is given in the following table:
<table>
<thead>
<tr>
<th>Attitude about PCMM of respondents in Cluster 1</th>
<th>Attitude about PCMM of respondents in Cluster 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too many practices and procedures in PCMM does not complicate the process</td>
<td>Not sure about whether too many practices and procedures in PCMM complicate the process or not</td>
</tr>
<tr>
<td>Not sure about whether Transparent practices in PCMM is unnecessary for all activities or not</td>
<td>Transparent practices in PCMM is necessary for all activities</td>
</tr>
<tr>
<td>Time taken by PCMM Training is reasonable</td>
<td>PCMM Training takes most of the time in work activities</td>
</tr>
<tr>
<td>Quantitative measurements in all activities are not necessary</td>
<td>Not sure about whether Quantitative measurement in all activities are necessary or not</td>
</tr>
<tr>
<td>Implementation of PCMM is not a complicated and time consuming process</td>
<td>Implementation of PCMM is complicated and time consuming process</td>
</tr>
<tr>
<td>Documentation procedures in PCMM are necessary</td>
<td>Not sure about whether documentation procedures are necessary not</td>
</tr>
</tbody>
</table>

### 7.1.2.2 Findings related to PCMM level 2 key process areas and key practices

1) The designation of the respondents has no impact on opinion of respondents on execution of the 14 key practices of PCMM Level 2 Key process areas namely planning in work assignment, planning in recruitment, selection process, exit interview for voluntary resignations, information availability, consideration for individual opinion, conflict and problems resolving mechanism, resources availability, physical environment, health and safety measures, performance objectives establishment, recognition of outstanding performance, timely training and communication of compensation strategy. The opinion of the respondents regarding the execution of these 14 key practices in level 2 key process area is perfect.
2) The designation of the respondents has impact on opinion of respondents on execution of other 7 key practices of PCMM Level 2 Key process areas such as work load balance, consideration for internal sources in recruitment, procedures and policies of downsizing activities, management of performance activities, need based training, Fairness in compensation strategy and transparency in compensation strategy in PCMM level organization. The opinion of the respondents regarding the execution of out of these 7 key practices in level 2 key process area, 6 are perfect and work load balance has slight difference because of most of the team members and some of the team leaders/project manager has given their opinion as “No idea” and HR professionals opinion is perfect.

7.1.2.3 Findings related to PCMM level 3 key process areas and key practices

1) The designation of the respondents has impact on opinion of respondents on execution of key practices of PCMM Level 3 Key process areas namely identification of workforce competencies, competency based work allocation, availability of strategic workforce plan, availability of succession plan for all positions, preparation of training and development plan, proper communication regarding developmental opportunities, clear definition for career opportunities, fair and policy based promotions, recruitment, selection and placement based on workforce competencies, compensation based on workforce competencies, rewards and recognition for application of workforce competencies, analysis committed work, methods and procedure for performing common work group functions, matching of skills of the work group activities with the identified competencies, participation in structured decision making process and proper mechanism for resolving conflicts and
disputes at 95 percent confident level. The execution of all key practices in level 3 key process area is perfect.

7.1.2.4 Findings related to PCMM level 4 key process areas and key practices

1) The designation of the respondents has impact on opinion of respondents on execution of key practices of PCMM Level 4 Key process areas namely competency-based processes in interdependent work, encouragement and support for the development and performance of empowered workgroups, availability of competency based processes information for employee future reference, special compensation for development and use of competency based assets, defined measurable performance objectives, corrective actions for deviation, definition of proper metrics for all function of HRM, organizational capability management in quantitative term and guidance and support from mentors to individuals or work groups. At 95 percent confident level.

2) Team members are not having proper idea about execution of competency-based processes in interdependent work and special compensation for development and use of competency based assets. Team leaders and HR professional has given their opinion as the executions of these 2 key practices are perfect.

3) For the key practices encouragement and support for the development and performance of empowered workgroups, availability of competency based processes information for employee future reference, defined measurable performance objectives, corrective actions for deviation and guidance and support from mentors to individuals or work groups, the opinion of respondents regarding execution of key practices are perfect.
4) For the key practice definition of proper metrics for all function of HRM, there is a significant difference in the opinion. Team members and team leaders/Project managers are not aware much about this key practice. From the HR professionals’ opinion, the execution of this key practice is imperfect in PCMM level.

5) For the key practice Organizational Capability management in Quantitative term, Team members and team leaders are not aware much about this key practice. From the HR professionals’ opinion, the execution of this key practice is perfect in PCMM level.

7.1.2.5 Findings related to PCMM level 5 key process areas and key practices

1) The designation of the respondents has impact on opinion of respondents on execution of key practices Mechanism for continuous improvement, Continuous improvement in the alignment of performance and Implementation of Innovative practices based on evaluation of PCMM Level 5 Key process areas in PCMM level organization at 95 percent confident level.

2) Team members are not having proper idea about Mechanism for continuous improvement. Team leaders/project managers and HR professional have given their opinion as the execution of this key practice is perfect.

3) For the key practices Continuous improvement in the alignment of performance in PCMM Level and Implementation of Innovative practices, team members and team leaders/Project Manager are not aware much about these key practices. But HR professionals have given their opinion as executions of these key practices are perfect in PCMM level.

4) The designation of the respondents has no impact on opinion of respondents on execution of key practice encouragement for proposal innovative improvement
work force practices of PCMM Level 5 Key process areas at 95 percent confident level. The opinion of the respondents regarding the execution of encouragement for proposal innovative improvement work force practices in level 5 key process area is perfect.

7.1.3 Findings related to the impact of PCMM on organizational level

1) 53.7 percentages of employees have dissatisfied, 16.7 percentages have been neutral in their satisfaction and only 29.6 percentages of employees have satisfied in the organization before implementation of PCMM.

2) 65.7 percentages of employees have satisfied, 1.9 percentages have been neutral in their satisfaction and 32.4 percentages of employees have highly satisfied in the organization after implementation of PCMM.

3) There is a difference between opinion of the HR professionals about the level of satisfaction of the employees before and after implementation of PCMM and level of employee satisfaction after implementation has been greater than level of employee satisfaction before implementation.

4) There is a significant agreement between the respondents regarding the ranking of reasons for implementation of PCMM in an organization. The top five reasons for implementation of PCMM are the reduction of turnover, outperform the competition, to raise company reputation, timely delivery of software product, and improve the quality of software product.

5) There are significant differences in the level of organizational improvements (20 factors) before and after the implementation of PCMM. The level of improvements before and after the implementation of PCMM is given in the following table:
<table>
<thead>
<tr>
<th>Organizational Improvement Factors</th>
<th>Before Implementation</th>
<th>After Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress level in the organization</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Time spent on employee development</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Productivity of the organization</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Quality of the software product delivered</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Work place accidents</td>
<td>Average</td>
<td>Low</td>
</tr>
<tr>
<td>Time taken to fill vacancies</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Cost per recruitment</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Profit</td>
<td>Average</td>
<td>High</td>
</tr>
<tr>
<td>Competitive Advantage</td>
<td>Average</td>
<td>Very high</td>
</tr>
<tr>
<td>Product delivery time</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Talent attraction</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Attrition rate</td>
<td>Very high</td>
<td>Low</td>
</tr>
<tr>
<td>Structured knowledge management</td>
<td>Low</td>
<td>Very high</td>
</tr>
<tr>
<td>Rework time</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Technical Training time</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Review efficiency</td>
<td>Average</td>
<td>High</td>
</tr>
<tr>
<td>Performance expectations</td>
<td>Average</td>
<td>High</td>
</tr>
<tr>
<td>Client feedback scores</td>
<td>Average</td>
<td>High</td>
</tr>
<tr>
<td>Employee morale</td>
<td>Average</td>
<td>Very high</td>
</tr>
<tr>
<td>Scalability</td>
<td>Average</td>
<td>Very high</td>
</tr>
</tbody>
</table>
7.1.4 Findings related to the problems of PCMM implementation

1) 38.9 percentages of respondents have strongly agreed and 30.6 percentages have agreed that lack of management commitment has been the most important problem of PCMM implementation.

2) 29.6 percentages of respondents have strongly agreed and 45.4 percentages have agreed that high implementation cost has been the most important problem of PCMM implementation.

3) 38.9 percentages of respondents have strongly agreed and 41.7 percentages have agreed that lack of employee commitment has been the most important problem of PCMM implementation.

4) 29.6 percentages of respondents have strongly agreed and 50 percentages have agreed that high training cost has been the most important problem of PCMM implementation.

5) 25 percentages of respondents have strongly agreed and 50 percentages have agreed that high infrastructure need has been the most important problem of PCMM implementation.

6) 25 percentages of respondents have strongly agreed and 50 percentages have agreed that consultant fees have been the most important problem of PCMM implementation.

7) 10.2 percentages of respondents have strongly agreed and 35.2 percentages have agreed that high implementation time has been the most important problem of PCMM implementation.

8) 5.6 percentages of respondents have strongly agreed and 50 percentages have agreed that high training time has been the most important problem of PCMM implementation.
9) 5.6 percentages of respondents have strongly agreed and 39.8 percentages have agreed that consultant availability has been the most important problem of PCMM implementation.

10) 10.2 percentages of respondents have strongly agreed and 35.2 percentages have agreed that high pre-planning time has been the most important problem of PCMM implementation.

11) From the factor analysis, the variables high training time, high implementation time, high pre-planning time and consultant availability are grouped and interpreted as time constraints and recorded as the problem PCMM implementation.

12) From the factor analysis, the variables high infrastructure need, consultant fees, high implementation cost and high training cost are grouped and interpreted as cost constraints and recorded as the problem PCMM implementation.

13) From the factor analysis, the variables lack of top management commitment and lack of employees’ commitment are grouped and interpreted as commitment constraint and recorded as the problem PCMM implementation.

7.1.5 General Findings

1) For implementing PCMM, There were not significant changes. The only change what we need is formalization of informal processes and making them a standard.

2) All organizations normally face problems when they are implementing change management programmes. Same thing happens for PCMM also.
7.2 RECOMMENDATIONS

7.2.1 Recommendations related to PCMM level key process areas and key practices

1) Team members and team leaders / Project manager are having less understanding in Level 4 and Level 5 key practices. Because, these two levels key process areas and key practices dealt by strategic management level. Employee wants to see how their work contributes to larger corporate objectives. Employees who don’t understand the importance of particular key practices are more likely to be disengaged. So, No matter what level the employee is at, he should be given clear understanding exactly how his efforts feed in to the broader company strategy.

2) In every organization, the experience plays vital role in effectiveness of implementation of any model. The employees with less experience are less satisfied with the awareness and training of PCMM. The awareness of PCMM should be created at the orientation itself. The purpose of PCMM, the roles and responsibilities should be communicated in the orientation. So, people know what is expected and feel like part of in the crowd. This step would make them feel honoured and would augment loyalty of top performers towards on organization.

3) When executing the PCMM level 2 key practices, the some of the team members and team leaders are not ready to express their views on work load assignment. In order to reduce this controversy, the organization should establish focal point and senior management should formulate strategies to reduce the work load of team members and team leaders by utilizing the
emerging technologies. The SEI should also concentrate on making clear
definition for work load assignment for each category of employees.

4) Definition proper metrics for all functions of HRM is not available in PCMM
model. Each and every organization is following their own measurement. So
SEI should introduce proper HR metrics to measure all HRM functions
quantitatively.

5) Creating awareness will help the employees to understand the execution of
Level 4 and Level 5 key practices.

6) From the Cluster analysis, the employees’ attitude about PCMM Model differs
in two ways. The specific attitude of the employee should be identified and
necessary steps should be taken to bring the favourable results for PCMM
implementation.

7) Attitudes of employees in Cluster 1 are mostly favourable to PCMM Model.
Two problems have been addressed in this cluster: i) Transparent practices for
all activities are unnecessary. ii) The quantitative measurement in all activities
is unnecessary. The first problem can be resolved by organization itself. They
have to educate employees how transparency and fairness in every initiative
build trust to contribute more towards the organization. In the second problem,
confusion may be because of not defining proper HR metrics. So the creators
of PCMM model should give proper explanation for the importance
quantitative measurements.

8) The employees in the Cluster 2 are not having clear understanding regarding
the PCMM model. So awareness training should be given for these people to
make better understanding.
7.2.2 Recommendations for resolving Problems of PCMM Implementation

1) The employees training are very expensive at times. It is an undisputed fact that employees training have many advantages. But at the same time, companies cannot have their employees out of work for several days. In this context, on line training can be the best option by which companies can save their resources while training their employees much faster. They can provide training to a large group of employees at a convenient time by keeping content rich learning material. Employee can access the content and they can learn all the PCMM levels clearly.

2) Employees are unlikely to be productive or highly committed to the organization unless they feel the sense of ownership on their work. Ownership feeling will be created when the employees as well as organization equally get benefitted. Now –a- day’s employee has become competitive in talents /skills / competencies. They have realized their need to enhance their capabilities to invite better opportunities with heavy pay packets. To increase the commitment, the organization should ensure how the PCMM helps the employees to develop their capabilities and the benefits and improvements of PCMM for both organization and employees.

3) The implementation and training cost are high for PCMM at the initial time. But when referring cost benefit analysis of PCMM implementation, the benefits outweigh the cost in the long run. Surviving in the long run is the most important concern for any organization. PCMM implementation would bring competitive advantages to survive in the long run.
As PCMM consists of so many key practices, the implementation greatly relies on consultants. Consultants’ availability is the important problem. The SEI should give training for experts inside the organization. So that, they can act as consultant for implementation and as mentors for the employees on PCMM related issues.

Combining CMMI (Process Maturity Model) and PCMM in one appraisal using Standard CMMI Appraisal Method for Process Improvement (SCAMPI) would help to reduce the implementation time.

### 7.2.3 Recommendations for Non-PCMM organization

If the Non–PCMM organization wants to get benefitted from the reduction of turnover, outperform the competition required for the effective functioning, to raise company reputation, timely delivery of software product, and improve the quality of software product, the implementation of PCMM is the right choice. Other than these benefits, the following benefits can also be attained through PCMM implementation:

1) The factors which induce the satisfaction in individual level are work load, compensation training, career development, work environment, promotion, performance appraisals and communication. The level of satisfaction for these factors in PCMM level organization is greater than Non-PCMM level organizations. The implementation of PCMM would bring the individual employee satisfaction and which would help the organization to retain their employees.

2) Compared with Non-PCMM organization, the documents availability for the HRM functions are very high in PCMM organization. The reference can be available for all levels of employees and execution of the activities without the help of the supervisors are possible at all levels.
3) The PCMM implementation would bring benefits to the organization by reducing the intensity of undesirable factors and by increasing intensity of desirable factors. Those benefits are listed in the following table for Non-PCMM organizations reference:

<table>
<thead>
<tr>
<th>Reduction Factors</th>
<th>Incremental Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress level in the organization</td>
<td>Time spent on employee development</td>
</tr>
<tr>
<td>Work place accidents</td>
<td>Productivity of the organization</td>
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<tr>
<td>Time taken to fill vacancies</td>
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<td>Project Training time</td>
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<td></td>
<td>Performance expectations</td>
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<tr>
<td></td>
<td>Client feedback scores</td>
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<tr>
<td></td>
<td>Employee morale</td>
</tr>
<tr>
<td></td>
<td>Scalability</td>
</tr>
</tbody>
</table>

7.2.4 General Recommendations

1) After tailoring some software product related key practices, the PCMM can be applied to Non-IT companies also.

2) Change management initiatives should be taken from the management side in the pre planning stage itself.
7.3 FUTURE RESEARCH DIRECTIONS

The present research has revealed the effectiveness of People Capability Maturity Model. Though this research has been carried out with reference to PCMM Level 5 software companies in Chennai city, the results may be generalized to other software companies in India. This paves the way for future researchers to apply the results, to explore more outcomes through further research in this field and the related fields. The researcher has also taken a step forward to identify potential areas in the field, where further research could be taken.

- Similar to this study, a study may be carried out with a special focus on problems of software companies for implementing PCMM.
- A study can focus on level 2, level 3 and level 4 and level 5 individually.
- In the present study deals with large companies, this research can be extended to tailor the PCMM for small companies.
- An intensive study to modify and apply PCMM key practices to Non-IT industries.
CONCLUSION

This research was carried out to evaluate the effectiveness of People Capability Maturity Model and its role in developing the capabilities. Human resource is an integral element within software organizations and refers to the economic value derived from the knowledge, skills, and abilities (i.e., competencies) possessed by the organization’s people. These unique competencies give the firm a competitive edge, differentiate it from its competitors and, due to its intangible nature, are hard to duplicate or buy. Thus, human resource creates more value than physical capital and is a strategic asset to the organization. The firm’s human resource management structures facilitate the creation of value within the organization and its products through the effective employment of these unique skills. The means by which firms manage their human resource is most effective when it is aligned with the organization’s strategic goals. PCMM is the people centred approach and it will align the organization’s strategic goals by step by step implementation. This research has brought out the fact that PCMM as an improvement tool can be practiced conveniently and will provide effective results to the organization.

The competitive environment of the world expects every organisation to be well-equipped with modern methods and unique values. The research has thrown light on the acceptance of the PCMM in the organisations, which is a step forward in their growth towards excellence.

Based on the Findings related to the study, the researcher has come out with the recommendations related to reasons for implementation of PCMM, advantages and the effectiveness of key practices. It is sure that the recommendations given to the organizations would help them to achieve excellence in their activities.