

The Impacts of Software Product Management

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Abstract:

Software product management in an organization involved with various kind of activities for developing any kind of product or project, like it required a complete package of requirement's roadmap, product life cycle in which we decided and make decision for the progress of the product. The achievement of software product rely on the efficiency and capability of product manager there are also some other factors which will impact the performance of software products. We will discuss in this research. Basically, this research proposed some directions about good software product management.

Keywords Software Product Management, Skills, Team Co-operation, Product Manager.

1. Introduction

Improving **software product management** directly contributes to the improvement of the overall software development process. Software product management is the direction, which determine a software product from its starting point to ending point to produce as considerable value as feasible for the business. This research identifies different important impacts of software product management. Software engineers have identified many important impacts related to product management such as on its business value, risk uncertainty, investment cost, technical feasibility, communication skills of stakeholder, experience, and team work etc. [15, 5, 4, 6]. When organization launch any kind of product, management have to follow some **rules** and **regulation** to identify product related problems, and how to solve them.

An expertise person in any organization considered as essential part for the accomplishment of projects. Mostly software programs rely on expertise human abilities as software is the creation of humanistic mind. It follow those instructions what we assign [2]. 46.7% organization demand an expertise

product manager who must have 2 to 3 year experience and qualification of product manager is must be master degree level (40.7% agreed, survey result).

In the precedent decade, the software business has made a change from first progressing personalized software to progressing software as a quality effect. With this change a current function within product software companies appeared the product manager. [16,4,1,5] The idea of product manager was not a new. It first established in procter and gamble in 1931. As product marketing was endorsed in several business frameworks, the idea obtained popularity and became a subject for technical research.

Existing software product management foundation evoked with many kind of tasks in which product manager is necessitate such kind of approach to achieve a goal. According to research survey **73.4%** organization committed full time product manager. Due to a lot of activities one person cannot be responsible all of them. So, there is need to share the responsibilities in overall organization structure, therefore the appearance of specific product manager furthermore the overall product management become confused. [2]

1.1. Roles of product manager:-

Product manager play a role as **CEO** in organization. The role of product manager differs widely like Identify complications (low capacity to high), Solution Consultant (help to solve problems, low to high), project manager (high capacity to low) and solution managers (high capacity to low). [17] It would be helpful for us to draw a result on how the foundation of product administration developed in the consideration of another facts with different roles.

The recognition of product manager roles would help the software product distribution to discover the better way for their progress. [4, 1] The

following table clarify their roles with low and high capability.

Table1: Distributor Information Processing Activities during PLM

Low	High
<p>Complicate problem Distributors concentrate their conventional business proficiency and on fundamental relationship with their upstream and downstream partners. When faced any problem which is associated to product including complicated elements, they recognize and share with producers information, and demand for accurate result.</p>	<p>Solution manager Distributors have high practical and business associated abilities, and powerful inter organizational abilities. With these latest abilities, they have a better understanding of complicated product-related problems. Their present capability to develop and preserve relationship with their partners and permit them to “distributor” the procedure of detecting all results in relationship with producers and cooperate in its distribution to customers.</p>
<p>Solution consultant utilize important practical information and preserve relationship with their partners. When their customer face any kind of problem associated to product, they emerge with new ideas and proposed a solution.</p>	<p>Project managers have both the practical and business related skill to handle low complicated problems also handle cooperation with partners. They are capable to utilize these latest abilities to protect the whole procedure of recognizing and, individualistic of producers, literally applying a solution to a comparatively manageable product-related problem.</p>

Through this we identified product manager four roles. The remaining paper is organized as part 3 present the literature review, part 4 introduces the research methodology ,part 5 describe the management impact on business, part 6 evaluate the requirements and part 7 describe the risk uncertainty, part 8 present the team co-operation, part 9 and 10 closed the paper and discuss the conclusion and future work.

2. Literature review

Related work

Several researchers have conducted research studies in software product management firms of different countries.

“According to 2010 conducted survey, most important activities of product manager is included the 86% requirements, 77% identifying market problems, and the last one is competitive landscape 73%.” [5]

In 2012, a survey explores that 82.4% people are strongly agree that SPM can be successful when

employees are expertise and owned multiple skills to their job role and 96.47% people believed that proper skilled management is very important for the software product development.

In 2011 a survey conducted across 86 countries all over the world that explores contemporary VS latest products in different 5 groups. The review perceived that latest products extend 56% of business perforation. A dive occurs in 96% of current products. [18] 60% projects is failed because most of the organization cannot adopted a change other main reason failure of products is shortage of systematized and practicable possible ways of risk management. [18, 5, 19, 6, 7, 8] Risk defined as, risk is a direction whose main target is to recognize all problems and remove all software risk modules before they become a serious problem for product development. [20] Many businesses, software development organizations have a sufficient of risks for their projects. So product manager play a different roles to minimize them. As describe in Table2.

Table 2: Overview of related work

Reference	Title	Research Methodology	Limitations
[8] [6]	Project management assessment practices in Pakistan && software product management	//	Need for software control risks assessment, Quality management.
[5], [1],[23],[4]	Software product management impacts 2) risk assessment control	//	Improve the essential role of the company
[21]	Factors Influencing Software Development Productivity	Case Study and also Using quantitative approach	Team capabilities & experience, Tool usage & quality, Project constraints, Team size
[12]	Expert base skill management.	Using Quantitative approach(Surveys and questionnaires)	Need of expertise skilled management.
[22]	Make a better administration source of software projects.	// //	Communication skills of project manager, management skills, stake -holders satisfaction.

3. Research methodology

I have done questionnaire based on **international survey**. A detail questionnaire was prepared for data collection. Questionnaire was hosted in websites and also distributed though emails. My questionnaire divided into two parts, first section included multiple choice, which described different impacts of management in organization and second section is divided in short questions which described the personal detailed about software organization members, and about product manager.

Table3: Questionnaire responses result

Current position	Response Percentage %
Software engineers	60%
Sr. software engineer	20%
Software product manager	15%
Others	5%

3.1. Result and analysis

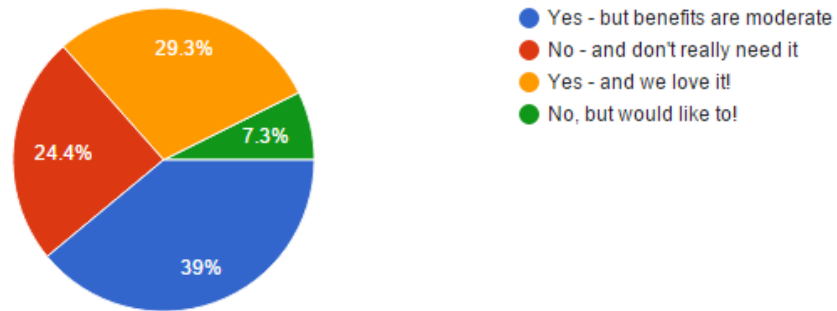
This research work is presented three sections a, b, and c. section A consist of individual and organizational information of organization. Section B consist of general software product manager practices, section C consist of product manager skills.

A. Individual and organizational information:-

This section described individual and organizational information of software development industries. This section also contain into two sub parts are as follows:

Organization information

My all respondents belonged to software houses that have number of employee age between 20to40. I ask personal information to employees did they ever purchased or subscribe company software for the organization development? 39% respondents say yes and 29.3% respondents loved it. As the following fig shown responses:



Individual information

When I ask about the skills of good product manager, means how much he/she at least have an experience 46.3% responded believed that 2 year experience. A good product manager have a good communication skills. Because product

manager communication skills impact on the organization performance. 58.5% are strongly agree. 37.1% respondent believed that for a good product manager, required master degree education. The responses have been shown in the following fig:

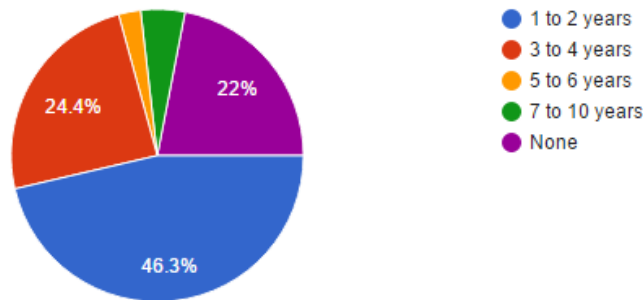


Figure 1: Product manager experience

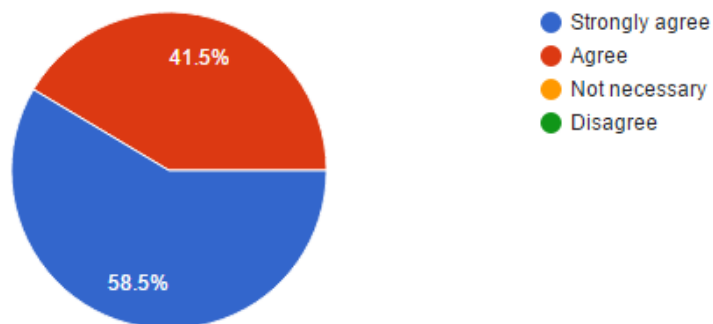


Figure 2: communication skills

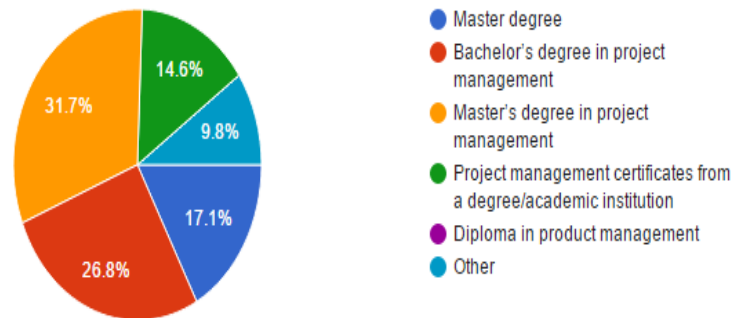


Figure3: education required for product manager

B. General software product manager practices

Product manager involved with different activities and practices. This section described implementation of these practices.

Software planning and approximation:-

This part discussed the modification of planning and approximation of software were

examined. Most of respondent uses expert based management approximation. 41.5% are strongly agreed that expert management impact is still widely used for software approximation. But respondents also believed that budget problem and team co-operation problem effect on project plan. The following responses shown:

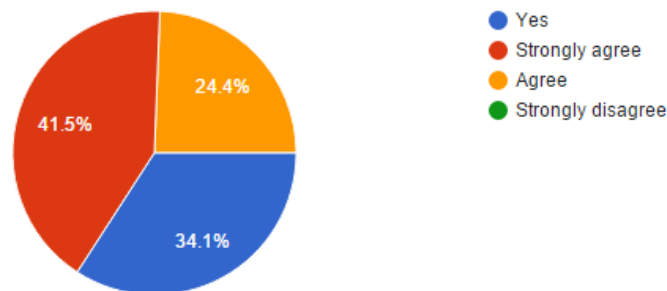


Figure 4: Expert management impact on planning

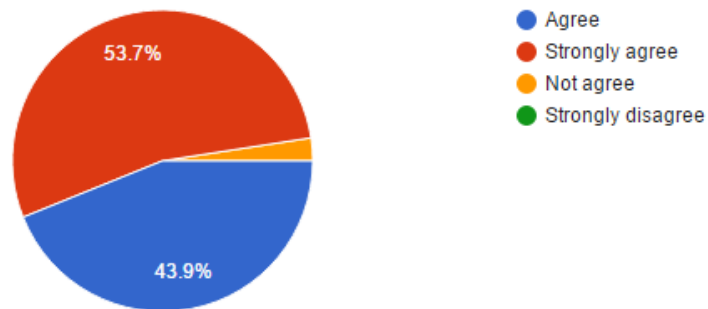
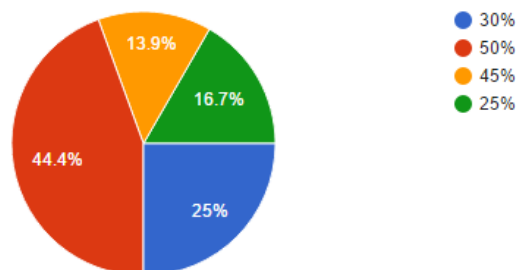


Figure5: lack of resources effect on project plan

Software Risk and uncertainty control:-

Software risk assessment control is very important for the development of the organization. Software product management

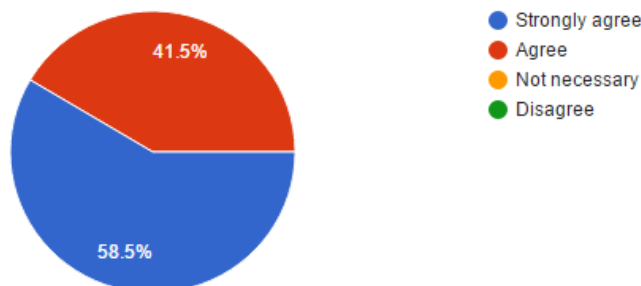
also playing a vital role to control the risk assessment. 44.4% organization trying to spend 50% resources to control the risk uncertainty. As the following responses shown that:



C. Product manager skills

This section described the effectiveness and importance of product manager skills. Product

manager skills must be strong so he/she can catch the attention of customer as well as properly lead to employees. 58.5% respondents are strongly agreed. As the following responses shown:



4. Business objective and value

4.1. Business objectives

For the development of the organization all goals must be set and clarify. This is traditional knowledge and yet reasonable. A large number of organization had survived to keep that people are exerted by objectives. A market holder must set objectives and then accomplish goals. There are a lots of dependencies between product line, release, and different individual projects which is managed by product manager, his team in-fact by whole management.

Basically business development depend on two important things, 1) the business reputation in market. 2) What is the currently competitive situation of the business etc. some objectives clearly go through their goals, which is only possible “three of them”, schedule, quality, and time. [4]

4.2. Business worth:-

Does appropriate software product management means excellent business performance??

So yes, 100% people are agreed that if software product management is efficient and co-operative then business will be successful. Business value of organization is depend on how much profit an organization is earned per year.

So the important research question is how many product is releases per year in organization? The result is 75% internationally and nationally organization released 3 to 5 products every year. According to survey result, they have not enough resources to handle many products because sometimes customer requirements change continuously. Only 20% organization ranked in a list who launched 40 to 50 products every year, and 5% response is it's depend on need. Expository, for this positive impact on product management involve leadership and teamwork, acquire complete knowledge of stakeholder needs, managing all risks and uncertainty, responsibility towards business important objectives- managed by one authorized person over the life cycle.

5. Evaluate business needs and requirements

Requirements must be comprehended and evaluated by team members and ensure that each side of view is examined. Each requirement must be advocated because requirements support to the business development and little un-justification in requirement allow to change the business priorities. If product developed on un-justification basis then organization development in a big problem because of these requirements will change continually. [1, 4]

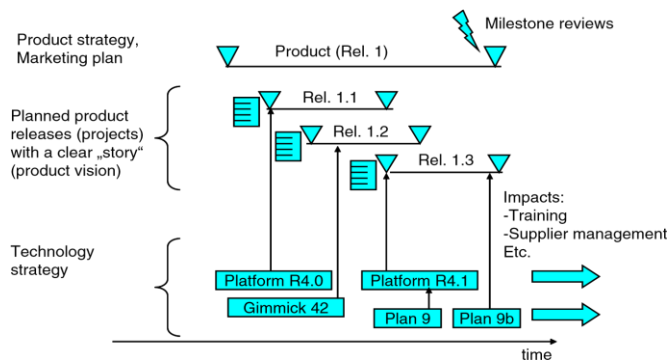
Software product administration first understand the product **needs** and business vision. Because good administration first understand the customer needs then evaluate product features. Requirements are not messy and too detailed because it cause of a lot of risk in business. Requirements and objective must be managed throughout the life cycle. If team have a clear business vision or purpose, mission they defiantly succeeded. [6, 7]

6. Risk Uncertainty

In product management risk considered as a loss means the quantity of desire result is not successfully achieved. Uncertainty is estate of product management we use as presumptions of explaining and detecting the result of projects. [23]

Requirements are unpredictable and need to be managed in sequence so risk can keep within acquire limits. There is a lot of technique exist to deal with unpredictable requirements and master product or project risks [4]. Projects must be predetermined to handle risks before coming unpredictable customer requirements, or Supplier dedication because 86.7% are agreed that before the delivery of the product all risk should be planned and solved. This problem is solved when an organization have enough resources. 44.4% organizations employee agreed that 50% resources must be available to handle all kind of risks.

Product manager should manage all risks in product line and standard level as against to a single project. Each single project have its own tale with major attributes which will be used for advertise and sales purposes. When a product release each product have its own defined scope like cost, deadlines etc. Due to a lot of dependencies between product contents often act as a buffer for risks and uncertainty product management. Following image shows that when a product strategy is released.



Product strategy and road-mapping [Ebert, 2009]

Road-mapping is used to build or improve the enterprise value as the above fig shows clearly.

Management should implement coherent strategy in order like cost, all threats, risks, product contents etc, are evaluated step by step. Software product management handle all their projects one by one but according to priorities, (50% organizations are agreed.)

7. Co-operative Team work

Many times different stakeholders have unbalanced agendas that make organization projects delay and reason for a lot of overwork. The initial activity is to do make a central group for the development of products. This is the most important success factor for the organization. As survey conducted, 76.6% strongly agree that organization development base on the co-operative team. Most of the organization (75.6%) nationally and internationally work all time for the betterment of the organization. It is only possible just because of their co-operative team member and leader. 56.7% software houses employees also work in a weekend days approximately 6 to 7 hours for the development of the organization. All Employees even a product manager have too work load in an organization. So, important question is how product manager behave with customer in a pressure or load condition??

The answer is clarify through survey search, 80% pm balance their behavior with customer as well as their team members, always treat them in a good way for the better output. The main fact is to give this central team to an understandable instruction to own the project and also calm down in a pressure condition. In many cases, this means the essentially is not only to develop a team, but also train them properly so they can face any situation and adjust

in environment easily. As we frequently perceive, "culture changes when targets are adjusted." [Ebert, 2009]

8. Conclusion

The aim of this research basically shows the importance of software product management practices in local software industries. Product management is very important for the development of the organization. Due to a lot of product manager practices, responsibilities are equally shared to other roles of manager. Most of the international software industries rely on the skilled based estimation. It's a good thing that most of the software industries using their 20 to 25% resources to control risk uncertainty. But it's not enough to handle all of them. Most of the industries know the importance of software product management, but still of them not follow proper product management just because lack of resources. Experience product manager's important for project success. Some Positive impact factors of the product management have been described, such as business objectives and its value, evaluate need of requirements, team co-operation, and risk uncertainty. These are the most important factors found through research analysis. One the most important factor is requirement gathering because requirement changes time to time. So most of the respondent believe that product manager decision power must be strong. It is better for the organization development.

9. Future work

The impact of software product management have some limitations, like most of the software industries failed just because they don't have complete control on the risk assessment, also used the old traditional methods, which take a more time. Most of the software industries need to use better quality tools and techniques .In future I will present, estimation tools and latest technique which will be used to decrease the risk uncertainty and increase the size of good quality products in less time. In future I will also compare top management techniques with other organization around the world.

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