MANAGERIAL ISSUES IN SOFTWARE PRODUCT DEVELOPMENT

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Abstract: Software development market need more innovation and there exists a wide market opportunity for the same. Rather than looking Software as a Services (SaaS) developers can look Software as a Product (SaaS) and can grab the opportunity. The managerial issues in software product development are highlighted in this paper. Apart from using secondary sources, primary data is collected from 260 software professionals to have insight. By applying appropriate statistical tools (ANOVA) it is found that there exists a difference in skill set within a project and employees need to be trained further to have better co-ordination.

Keywords: Software Product, New Product Development, Software management

1. Introduction

New product concerns the management of the disciplines involved in the development of new ideas. These disciplines have developed their own perspective on the subject of New Product Development (NPD). Arvind Rangaswamy (1997), identified and classified the major categories of software tools that are available for supporting NPD and explained the role of software tools in the NPD process. These are largely based on the experience of involvement in the process. A product development process is an entire set of activities required to bring a new concept to a state of market readiness. This set includes everything from the initial inspiring new product vision, to business case analysis activities, marketing efforts, technical activities, development, and the validation of the product to confirm these plans. The classification by Booz, Allen and Hamilton, during 1982 identifies the commonly accepted categories of NPD. The screening of product ideas supported by the NPD process design throughout the phases Kristina Risom Jespersen (2007) and the New Product Introduction (NPI) Charles Tennant (2003) is widely accepted.

The success in business depends on the success in introducing new products to the market place. Time to market is frequently identified as one of the key factors that enable technology-intensive firms to compete and succeed. An application is “custom-built” for a single organization or set of users, but a product is “generic” and is built to cater to the demands of a wide variety of users. However, each user needs to be able to use the product in a way that suits him/her. Hence, a product must be customizable, scalable, well architectured, and must have a solid framework on which one can build new features.

2. Review Of Literature

Petra C. De Weerd-Nederhofl (2001), shares his experience on doing his research project on organizing and managing new product development systems. In a similar work by Ganesh N Prabhu (2005), seeks to understand the complexities of the NPD process with a panel discussion at IIM-Bangalore,

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India. The panel reviewed the emerging opportunities in NPD in India, strategies for the development of new products, product development capabilities, and the issues and challenges in the commercialization of new products.

Walket Royce (2002), stated on some of the techniques involved with reducing the size or complexity of the software and improving the software development process. The main thrust of process improvements is to improve the results of productive activities and minimize the impact of overhead activities on personnel and schedule.

Pankaj Mishra (2003), stated Indian software service companies invest a mere one to two per cent of revenues in branding initiatives. The brand attributes, namely cost-effectiveness and English-speaking skilled manpower, have contributed to whatever the Indian brand stands for. The Capability Maturity Model (CMM) exist define the quality standards in a standard industrial practice. But, smaller companies with shorter development life cycle products cannot able to follow this approach, due to more time consuming that the real project time Nagarajan S.K. (2005).

Magne Jorgensen (2004), in the experiment conducted indicates that customer expectations have a surprisingly large impact on software development effort estimates, even when the estimators are told to disregard this information.

Melissa A. Schilling (1998), analyses the importance of NPD over the last few decades. When firms are choosing technologies to acquire externally, they must assess the importance of the learning that would be accrued through internal development of the project, and its impact on the firm’s future success. Nelson P. Repenning (2001), developed a model for fire fighting in a multiproject development environment. Creating “Fire-resistant” NPD systems requires the development of more dynamic methods of resource planning.

3. Product Market

As per NASSCOM’s predictions, Indian software and services exports are expected to grow every year. Product development basically involves R&D and investments which is gaining importance nowadays. Innovations and R&D are investment intensive and involve a huge amount of risk. Through Public Private Partnership (PPP) financing is done and more development is expected to deliver in the coming days. The importance of project management skills need to be developed and developers to be more trained in managerial skills. Most of the projects got delayed due to improper planning and execution. It is argued that the available man power is not utilized in the right direction and the project got delayed. The cycle time of projects is to be systematically planned, executed and monitored.

![Figure 1: New Product Positioning](source: www.en.wikipidea.org)

Marketing would be concerned with trying to understand the needs of the customer and how the business could best meet these needs. The Figure 1 shows the new product development and market positioning. The level of innovation is more important in the NPD process. Software would be concerned with adding new features to the existing product or developing new product which re-defines the whole business process.
The success in business depends on the success in introducing new products to the market place. Time to market is frequently identified as one of the key factors that enable technology-intensive firms to compete and succeed. Software is gaining importance in the global market. An application is "custom-built" for a single organization or set of users, but a product is "generic" and is built to cater to the demands of a wide variety of users. However, each user needs to be able to use the product in a way that suits him/her. Hence, a product must be customizable, scalable, well architected, and must have a solid framework on which one can build new features.

To measure the project management skills, basic five areas like identification, screening, unit analysis, integration analysis, and field study were considered. A questionnaire is developed; validated and primary data is collected to understand the product development market. 893 data were received out of that 260 samples were identified as appropriate and considered for the study. The integration between technical, HR, Marketing, Product development, Finance, were considered for the study.

Table 1. Relationship between Product development activities

<table>
<thead>
<tr>
<th></th>
<th>No. of respondents</th>
<th>Anova repeated measure</th>
<th>Deviance contrast result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Omitted</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Project management skills [5]</td>
<td>0 (0.0)</td>
<td>30 (11.5)</td>
<td>46 (17.7)</td>
</tr>
<tr>
<td>Communication between departments [10]</td>
<td>0 (0.0)</td>
<td>6 (2.2)</td>
<td>47 (18.2)</td>
</tr>
<tr>
<td>Planning [5]</td>
<td>2 (0.7)</td>
<td>89 (34.2)</td>
<td>106 (40.8)</td>
</tr>
<tr>
<td>Management Style [8]</td>
<td>0 (0.0)</td>
<td>14 (5.3)</td>
<td>181 (69.7)</td>
</tr>
<tr>
<td>Managerial skills [3]</td>
<td>1 (0.4)</td>
<td>62 (23.8)</td>
<td>122 (46.9)</td>
</tr>
<tr>
<td>Top management support [5]</td>
<td>4 (1.5)</td>
<td>9 (3.4)</td>
<td>71 (27.4)</td>
</tr>
</tbody>
</table>

[ ] – Value shows the number of questions considered for data collection.

From the Table 1, it is evident there is a significant difference between the various considered skills and all the six skill set varies among each other. Using Analysis of Variance (Anova) repeated measures and deviance contrast result it is found that there is difference between this skills set. The project is mostly on the design and the process made. Hierarchy should be maintained to have better control and also freedom to communicate is permitted for betterment.

Considering planning as an important activity in software project development five divisions was identified. Taking the management style eight most significant properties were measured for the study. The managerial skills are sub-divided into major three segment like technical, marketing, and human skills. Every project has to be supported by top management and this study has also measured the top management support in the fields like decision making, level of support to the project, and involvement in the project, motivation on the project, and interest to share the available resources.

4. Conclusion

Software development is a process which is highly technical and marketing the software product which is managerial. In order to complete the product development in time there need a co-ordination among the team members and this involves both. It is found the implementation of cross-functional teams and co-ordination in the team needs more attention to reduce costs of NPD. The success depends on identifying a small segment and by standardizing creating a big market for the product. Development is an internal process and customer satisfaction is an external process to be managed effectively.
5. References


