An Empirical Study in Small Firms for Web Application Development and Proposed New Parameters for Develop New Web Application Model

Anju Kalwar, Reema Ajmera, C.S. Lamba

Abstract: Over The last ten decades, the web application has imposed a great impact on the modern society. In companies and in other sectors of development many web development methodologies are being implemented on a daily basis for the development out of which some are being customized by the company itself . In this paper, I was surveyed many web development companies and fill the survey form using some parameters and find new parameters developing the new web application model.

Index Terms: Web Application; Model; Empirical Study

I. INTRODUCTION

Web based applications and internet technology have become popular in our daily life in the past decade. The benefit of using the web system which is the combination of web server, network, & web browser that provides high reliability, high usability, security, shorter time to market, shorter product life cycle and continues Maintenance. A systematic approach for web application will guides, developer to develop the application by clearly going through the process and its final product quality. Furthermore the collection of rules and guidelines, set of concepts also provide a better idea of understanding and implementation of various phases. The majority of software companies are small firms having ten to fifty employees. .[1][2][3]

86% of software companies are categorized as small software firms and has 10 to 50 employees.[1][2][3] These firms create a very important sector in India as they provide important growth of Indian economy. Requirement specification, costumer involvement, overlapping phases, suitable project scale, expertise requirement and limited quality assurance adoption[2][4][5] are problems faced by such development companies which motivates a researcher. So by using current development and measurement methods these problems can be reduced. Son the software can be measured or define by reducing the defects and its cycle applicable to the whole process rather than being specific[6][7][8].By undergoing the empirical study, we investigated the most modern practices, keeping in mind the quality of services.

Revised Manuscript Received on 8 February 2019.

Anju Kalwar, Computer science and Engineering, JECRC University, Jaipur, India.

Reema Ajmera, Computer Application and IT , JECRC University, Jaipur, India.

C. S Lamba, Computer Science and Engineering, Manipal University C, Jaipur, India.

According to the survey conducted, we need to investigate a new methodology for small software companies keeping in mind time and budget. The aim of the paper is to propose new parameters required in the development of web application with a small software firm by getting high quality in a specific time and budget. This paper is divided into 5 sections. first section contains related work, the second contains methodology, the third contains data collected so far, fourth contains data analysis &result and last section contains the outcome of the proposed work.

II. RELATED WORK

By going through various development methodology they all address unique challenges & characteristics of web application Many methodologies are used in different models like a waterfall ,spiral, agile model, etc. They are having their own pros & cons which are not fit for the development of applications so to overcome this gap we have proposed new parameters for developing web application. These parameters highlight structural elements and activities that we assumed to be common elements in the domain of web application. Table 1 Comparison of waterfall model and agile model and proposed new parameters for developing web application model.

Indian's firms conclude that companies in these countries used the same. Some important recent and related work has been made, which indicates the lack of awareness of developing the important development practice during target organization.

III. METHODOLOGY

Methodology of questionnaire was performing as it was economical as well as reliable research questions were based on exploratory and pilot studies. Pilot study aims at investigate questions of an exploratory nature.

IV. DATA COLLECTION

The questionnaire is done purely to called data. In questioner, issues directly linked to study. Whereas questioners guide helps to find out, which questions will for suitable for proper collection of informative data are have after framing quite good number of suitable questions,

Published By:
Blue Eyes Intelligence Engineering
& Sciences Publication

we have approached four companies in India making application .We carried out questions from companies and were compared constantly.

V. DATA ANALYSIS AND RESULT

This section shows the result of a survey conducted and questionnaire from four web application development firms in India 2015.the data was collected by questionnaire and were filled by project leader, project manager, programmer Analyses, tester others. These data used for analysis. The results of the survey have been analyzed by using basic statistical methods, which are mean and standard deviation. Table 2. Show the data, mean and standard deviation value. Fig 1. Show the company using graphical representation phases and Fig 2. Show the phase's viola variation.

VI. OUTCOMES

In this section show the survey outcomes.
Developing web application is using the blueprints and designs the blueprint in html and cascading style sheet.
In testing Phase is used, scalability means check the web application run on all browsers, mobile screen and tab screen.
For developing web application using Word Star software and online Templates.

VII. LIMITATION

From study, we found that some issues need to be improved, which will cover in future. The first issue is that approaches tasks. During the pilot case study, we found that some task can't be categorized to one single process element and meanwhile some task do not belong to any process in all our case studies but in order to find an accurate process pattern. We put data inside. The input data for the process are "pure "task which can be surely identify on process element and second major issue is large size projects need to be divided into modules and component process model allows parallel development among modules even and When the process element is organized sequentially.

VIII. CONCLUSION

After the Calculations, We concluded the characteristics of small software firms that need to be changed at particular level i.e. initial, middle, lower level respectively. also we applied appropriate formula on the data surveyed and got values so we concluded fig (1) and fig (2) that new methodology should be proposed focusing on the current development scenario.

Table 1 Comparison waterfall model and agile[8] and proposed new model

Parameters / Process model ➡ Requirement specification	Waterfall model Initial level	Agile Model Frequently changed	Proposed New Parameters May be changed
Costumer involvement	Only at beginning	High	Medium
Overlapping phases	No	Yes	No
Suitable Project scale	Large-scaled	Low-medium	All Scaled
Changes incorporated	Difficult	Difficult	Medium
Risk identification	At initial level	Yes	Yes
Guarantee of success	Low	Very high	Very Good
Expertise Required	High	Very high	Medium
Understand ability	Simple	Much complex	intermediate
Predictability as per requirement	Low	High	Medium
Reusability	Limited	Use case reuse	To some extent
Testing	After coding phase completed	On every iteration	Scalability
Cost control	Yes	Yes	Yes
Document and training required	Vital	Yes	Yes
Maintenance	Least	Promote maintainability	Promote maintainability
Time frame	Long	Least possible	According to project

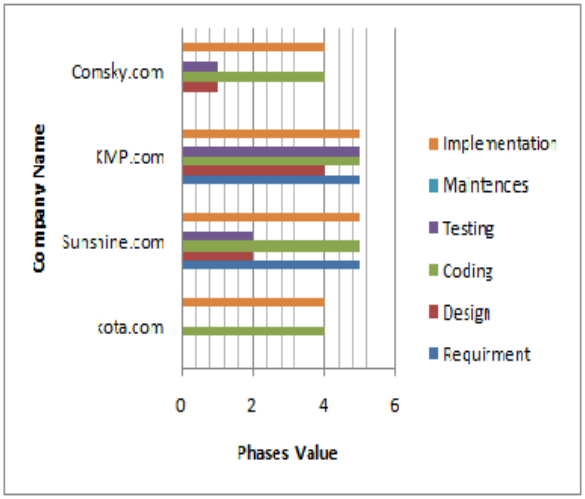

Fig. 1. A Company using phases

Table 2. Average phase use.

Company	Requirements	Design	Coding	Testing	Maintenance	Implementation
Kota.com Project running 4	0	0	4	0	0	4
Sunshine.com Project running 5	5	2	5	2	0	5
KMP.com Project running 5	5	4	5	5	0	5
ComSky.co Project running 4	0	1	4	1	0	4
Mean	2.5	1.75	4.5	2	0	4.5
Standard Deviation	0.625	1.525	0.5	1.87	0	0.5

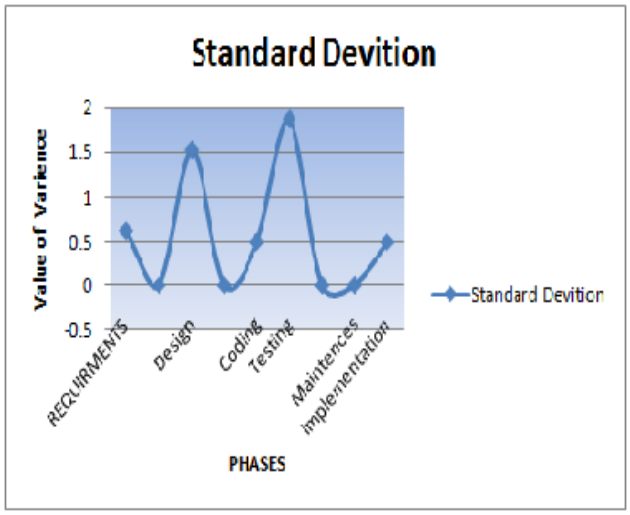

Fig. 2. Phases value of variance

REFERENCES

1. Fayad ME, Laitinen M, Ward RP. Thinking objectively: software engineering in the small. Communications of the ACM. 2000 Mar 1;43(3):115-8.
2. Hofer, C., 2002. Software development in Austria: results of an empirical study among small and very small enterprises. In *Euromicro Conference, 2002. Proceedings. 28th* (pp. 361-366). IEEE.
3. C. Y. Laporte, A. Renault, J. Desharnais, N.Habra, M. Abou El Fattah, and J. Bamba, In Proc. SWDC-REK, (2005), 153–163
4. Dangle, K.C., Larsen, P., Shaw, M. and Zelkowitz, M.V., 2005. Software process improvement in small organizations: a case study. *IEEE software*, *22*(6), pp.68-75.
5. Ahmad, F., Baharom, F. and Husni, M., 2012. Investigating the Awareness of Applying the Important Web Application Development and Measurement Practices in Small Software Firms. *arXiv preprint arXiv:1201.1967*.
6. R KETTELERIJ, Faculty of Science, University of Amsterdam, www.science.uva.n, (2006).
7. Eldai, O.I., Ali, A.H.M.H. and Raviraja, S., 2008. Towards a new methodology for developing web-based systems. *World Academy of Science, Engineering and Technology*, *46*, pp.190-195.
8. Mujumdar, A., Masiwal, G. and Chawan, P.M., 2012. Analysis of various software process models. *International Journal of Engineering Research and Applications*, *2*(3), pp.2015-2021.