ISSN: 2278 – 7798
International Journal of Science, Engineering and Technology Research (IJSETR)
Volume 2, Issue 8, August 2013

ECONOMICAL BENEFIT OF OPEN SOURCE TECHNOLOGY

Neha Tripathi, Dept. of Computer Science and Engineering, Suresh Gyan Vihar University, Jaipur, RJ, India
Vinay Tiwari, University Institute of Computer Science and Applications, R.D. University, Jabalpur, MP, India

***Abstract*— In a technological era where major giants like Microsoft are coming up with new versions of their software in each quarter, the Open Source Technologies are gaining popularity at amazingly crazy rates. With the increased recognition in every unit of IT sector, it plays a vital role in any company's multi-channel economical strategy. As economy is backbone of every company.**

However, how to apply Open Source especially how to utilize it to enhance any company's economic growth is still a big question.

This paper studies the economic contribution of Open Source Technology towards in software development organizations across the globe. Our goal is to analyze whether they follow the same regularities that characterize the behavior of other revenue generating technology in the industry. The paper mainly covers the acquisition process of Open Source, how it is valuable then other software's.

***Index Terms*— Acquisition process, Economical Benefit, Open source, Open Source Licenses, and Open Source Software (OSS)**

I. INTRODUCTION

Open Source technology, as opposed to proprietary software, offers the freedom to be used freely, which means that it can be used, copied, studied, modified and redistributed without any restrictions of engaging in dependencies on any single technology provider. This freedom of choice is considered a basic condition for an autonomous person in the information society.

The Linux operating system is a one of the best-known examples of open source software technology. Unlike Linux, Windows is built on a closed source paradigm that does not allow the end user the ability to see or edit the code that makes up the operating system. In fact, certain aspects of the system specifically forbid the end user from attempting to view or modify the code that makes up the software. Such attempts are often known as reverse engineering or reverse compiling.

Manuscript received July, 2013.
Neha Tripathi, *Department of Computer Science ,Suresh.Gyan.Vihar. University,Jaipur (RJ), (INDIA), Mobile No+91-9811626344*

Vinay Tiwari , *University Institute of Computer Science and Applications, R.D. University,* ***http://www.rdunijbpin.org/ufaculty.htm*** *Jabalpur, (MP), India*

II. BRIEF LITERATURE SURVEY

Early instances of the free sharing of source code include IBM's source releases of its operating systems and other programs in the 1950s and 1960s, and a user group named as SHARE was formed to facilitate the exchange of software.

The term "**Open Source**" was adopted by a group of people in the free software society at a strategy session held at Palo Alto, California, in reaction to Netscape's January 1998 announcement of a source code release for Navigator. The group of individuals at the session included Christine Peterson who suggested "**Open Source**", *Todd Anderson, Larry Augustin, Jon Hall, Sam Ockman, Michael Tiemann* and *Eric S. Raymond*.

Open source software is a fairly new topic for academic world for study. Literature study is carried out from general articles and to get information about open source software's in global world. To get the general idea of value of open source software on other software's literature on open source and other software's are consulted.

Because scientific literature from the academic libraries may not offer enough to complete the research, other sources need to be explored as well, by using search engines on the Internet, for example. Of course the validity of non-scientific resources is verified.

III. PROBLEM FORMULATION

The research for Open Source was done to get a better idea of value of open source software in corporate world. The Open Source software's were to be formulated in such a way that not only they become a medium to share knowledge, code and idea but also for yielding some major financial and economical benefits to the companies.

Open source software is compared with proprietary software and was found that companies are shifting from proprietary software to open source software due to freedom to use this software without any copyrighter intermediation. This gives a great edge for those firms which are having a relatively fewer economic resources and limited initial

capital for investment.

Open source software is computer software which is available with its source code and with open source license. Copyrighter provides full authority to developers to use, study, modify, and distribute software for any purpose without having to pay any license Fee or royalty for using it.

IV. Objectives

The research is done to evaluate the economic importance of open source software in corporate world. The goal of the paper was to explain and highlight the features of open source software due to which they are widely used from small and large enterprises for achieving their goals and purposes.

Several points were evaluated to highlight several policy-based reasons for adoption of open source software's as compared to most proprietary software's in the following categories:

- Affordability
- Transparency
- Perpetuity
- Security
- Interoperability
- Profitability
- Localization—particularly in the context of local governments (who make software decisions).

V. Methodology used in work

A. *Qualitative Research Method*

The information in the theory part is acquired through many textbooks, articles and websites by using qualitative research method, meanwhile also the introductory research is been carried out under the guidance of some experienced professionals of the Open Source technology.

B. *Quantitative Research Method*

N The quantitative method collates data from multiple sources and organizations. This method is used to collect all important data supporting the case study analysis. The effectiveness of the acquisition process is tested. However, all activities of acquisition process should be combined and implemented continuously to maximize use of Open Source software to corporate world.

VI. Case Study

Case study is performed on the value of open source software's in the corporate world. Open source software is chosen for this case study because as per recent surveys 98% of small and large IT companies use open source technology for software development. Open source is compared with other software's to get an idea for its preference by corporate over other software's. The value of open source software's is also evaluated from its performance and other aspects like annual license and maintenance cost etc.

Even Barclays has said it has reduced its IT spending for the development of new software and applications by 90 percent after moving to an internal private cloud environment and using open source Linux software.

One interesting change from the ongoing observation survey was how important people ranked the factors that matter to open source adoption in business:

1. Better Quality
2. Freedom from vendor lock-in
3. Flexibility, access to libraries of software, extensions, add-ons
4. Elasticity, ability to scale at little cost or penalty
5. Superior security
6. Pace of innovation
7. Lower costs
8. Access to source code

VII. Limitations

There are a few limitations that the Open Source Software imposes in the current era.

1) **Upgrades & Hot fixes:** There is no guarantee of updates. Although open source software is available to anyone for free, regular updates are not assured since users do not pay for its use.
2) **Vendors Support:** Not much support exists for open source software. Qualified support essentially does not exist. The available support for open source software is predominantly self-motivated discussions found on the Internet, and since the software is constantly being changed, no manuals or instructions are made.
3) **Unbounded Production:** Production can be very limited. Programmers that create open source software often can turn their attention elsewhere very quickly. This opens the door for many bug filled programs and applications out there. Because no one is paid to create it, many projects are never completed.
4) **Generic Patterns:** The Open Source software's are created to suite the most generic software requirements. The freely available codes for common software requirements like Content Management System's (CMS's), Customer Relationship Management (CRM's) and Supply Chain Management (SCM's) are readily available.

   But any requirement which is new to the corporate industry and not yet pondered over in recent past is not available with Open Source.

This case study is based on the study of data of many small

companies who are surviving on the base of open source software's such as Internet services provider companies for hosting, domain booking and providing web based services. All small business worlds uses Internet service provider companies for their web presence and how ISP's make use of these software's for fulfilling the requirements of their clients very easily.

VIII. EXISTENCE OF OPENSOURCE

A. *OPENSOURCE AND CORPORATE*

Open source software can be sold and used commercially. It is a part of the software industry. The financial return on open-source software can also come from selling services, such as training and support, rather than the software itself. The use of dual-licensing provides an offer of the software under an open-source license but also under separate proprietary license terms. Customers can be attracted to a no-cost and open-source edition, and then be part of an up-sell to a commercial enterprise edition.

Governments, companies or other non-governmental organizations may develop internally or hire a contractor for custom in-house modifications to software, then release that code under an open-source license.

B. *OPEN SOURCE SOFTWARE VS CLOSED SOFTWARE*

Under the closed source model source code is not released to the public. Closed source software is maintained by a team who produces their product in a compiled executable state, which is what the market is allowed access to. Unlike Open Source the closed software generally available with paid copies and remunerated licenses. The open source software model allows for able users to view and modify a product's source code free of charge. Common advantages cited by proponents for having such a structure are expressed in terms of trust, acceptance, teamwork, quality and price.

C. *OPEN SOURCE VS SOURCE AVAILABLE*

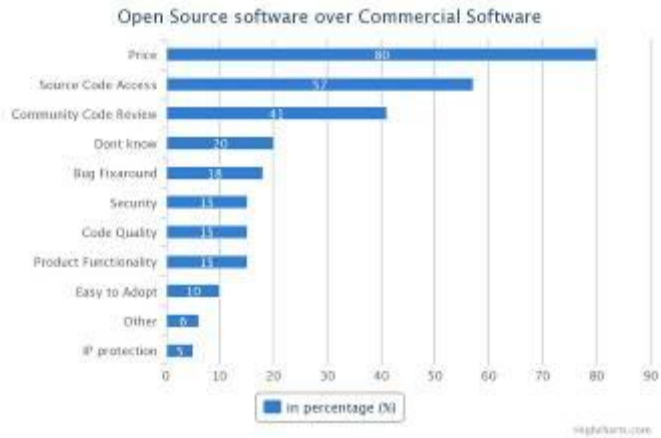
Open source term is used for the source code which comes under open source license and is available for all the users to use and modify it according to their purposes whereas the source available term is used for the source code which is also available and viewed openly from the users but cannot be used from them for their purpose and also cannot be modified.

IX. RESEARCH ANALYSIS

As part of some finding with software development companies in New Delhi (India). Along with the conversation with 50+ enterprise customers about advantages open source has over proprietary software, and vice versa.

First, open source's price tag is clearly an important driver. Yes, open source is much more than free, but it's often the first thing that captures the interest of an enterprise prospect (and, unfortunately, sometimes it's the last thing they forget). But it's not just a question of price. Fifty-seven percent said that source code access matters, while 41 percent cited community code review as an important benefit of open source over proprietary software. Clearly, source code matters, whether the customer exercises such rights by proxy or directly.

Other things like bug fixes, which have been shown to be dramatically superior in open source, get taken for granted a bit. But take them away for awhile, and I would imagine that their importance would get called out by open-source users.



ANALYSIS PERFORMED ON REAL DATA

Analysis was made on data taken from one on-going project or complete ERP solution made on open source platform for Kerala government handling 15,000 schools.

ERP solution Handling Kerala 15000 schools build with open source technologies.

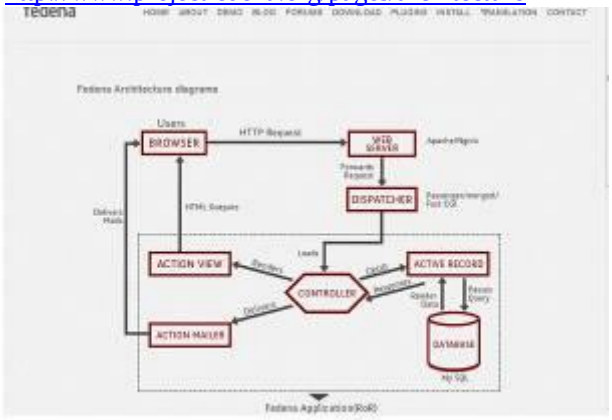
http://www.projectfedena.org/pages/sampoorna

Project Fedena is the open source school management system based on Ruby on Rails. It was initially developed by a team of developers at Foradian Technologies. The project was made open source by Foradian, and is now maintained by the open source community. Fedena is free & open source school management software that has more features than a student information system. Fedena can be used to efficiently manage students, teachers, employees, courses & all the system & process related to your institution.

Sampoorna is a school management system project

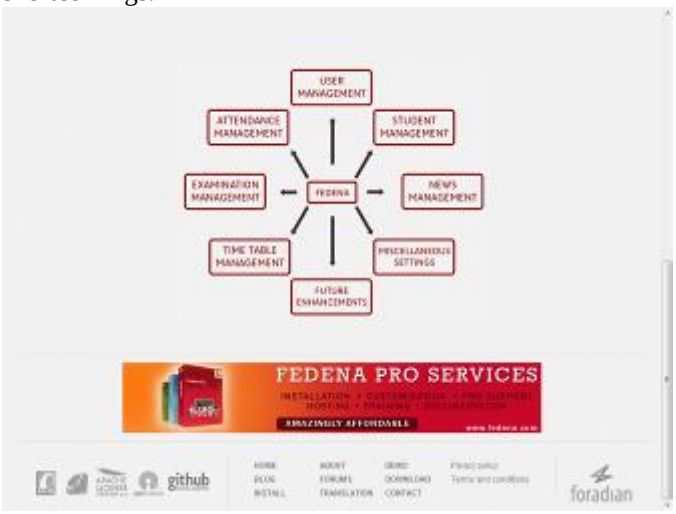
implemented by the Education Department of Government of Kerala to automate the system and process of over 15,000 schools in the state.

ARCHITECHTURE OF FEDENA:
http://www.projectfedena.org/pages/architecture



CONTRIBUTION TO FEDENA:-

Fedena is multipurpose school management software which is used by thousands of educational institutions worldwide for all administration, management and learning related activities. We can enhance the Fedena functionalities by making learning with fun. We can include a test module and fun games series for students. This makes the portal features to be stand out from the market and enhance the student's performance. We can also implement course management features and test the students understanding with an online test and evaluate their performance and improve the shortcomings.



X. CONCLUSION

The aim of the results is to show how the economical and financial decisions are made within organizations and hosts of Open source software development today. It also gives the necessary facts and figures required to draw conclusions about the economic benefits of using open source technology. Open Source development is a nicer fit than proprietary. It lends itself to many popular ethical systems. One good example of this is Utilitarianism which states that the appropriate course of action is the one that gives the most benefit to the most individuals.

Developers programming under Open Source can be confident that what they are producing will contribute positively for the greatest number of society. Also, as was previously mentioned, the Open Source community is very active.

The reasons for choosing OSS were:

- zero cost of acquisition
- Ability to use software for whatever purpose
- Ability to adapt software to meet local requirements
- Ability to distribute changes to the software.

FUTURE SCOPE

In the nearest future we are going to add the ability to upgrade the versions of currently existing Operating systems, networking software's, Office suites, accounting packages, CMS's , CRM's and many others with additions of new functionalities. The future scope can be defined precisely as:

Financial Payback: As it is open source where Copyrighter provides right to study, modify and distribute it to any one for any purpose for free. These functions are aimed to facilitate users as well as developers by decreasing efforts and increasing performance hence generating better revenues.

Scalability: A further functionality which we want to add in future is a new platform which will be connected like other CMS's. It will be aimed to distinguish between possible contributions to performance improvement. This platform will allow for better performance of the web based solutions.

Market Requirement: With further escalation in more specific requisite and introduction into every part of corporate sector, the Open source software's will be available from a wide range of generic solutions to more and more market requirement specific solutions.

.

ACKNOWLEDGMENT

The author wishes to thank several people. I would like to thank my parents for their endless love and support. I would also like to thank Mr.Vinay Tiwari as well for his assistance and guidance with this paper. Last but not least, I would like to express my special gratitude and thanks to industry persons for giving me such attention and time.

REFERENCES

[1] http://www.opensource.com/
[2] http://en.wikipedia.org/wiki/opensource
[3] http://www.projectfedena.org/pages/sampoorna
[4] http://www.projectfedena.org/pages/architecture
[5] Roger S. Pressman, (1997), Software Engineering A Practitioner's Approach, McGraw Hill, 4th Edition.
[6] Canonical Ltd, Ubuntu, www.ubuntu.com, Accessed March 2007

[7] The GNU Project, Copyright by Richard Stallman, Accessed Mars 2007. http://www.gnu.org/gnu/thegnuproject.
[8] "The open source platform for numerical computation". INRIA. Retrieved 2008-01-04.
[9] The Open Source Definition by Bruce Perens. January 1999. ISBN 1-56592-582-3
[10] Roth well, Richard (2008-08-05). "Creating wealth with free software". Free Software Magazine. Retrieved 2008-09-08.
[11] "The Open Source Definition"., The Open Source Definition according to the Open Source Initiative
[12] Boehm, Barry. Software Engineering, IEEE Transactions on Computers (25:12) 1976, pp. 1226-1241

Miss. Neha Tripathi is a qualified Computer Science graduate and pursuing Master of Technology in software Engineering from Suresh Gyan Vihar University, Jaipur, India. Her recent research has focused on economical benefit of open source technology. She has interests in Computer Programming, Web Designing/Development and Software Engineering. In the past years she has attended many National conferences organized at different places.

Mr. Vinay Tiwari is a qualified Computer professional having done PGDCA with distinction (1989) and MCA (2000). He is currently pursuing his Ph.D. in Computer Science. He has more than 20 years professional experience, 19 years of teaching experience at UG level and 12 years at P.G. level. He is a regular teaching counselor of Indira Gandhi National Open University for BCA/MCA courses from last 17 years and R.D. University Distance Education for last 8 years. He is a permanent resource person of Computer Refresher Courses organized by Academic Staff College for college teachers. His Area of interests are Computer Programming, Web Designing and Software Engineering. In the last 5 years he has attended 5 International and 6 National conferences organized at different places and presented research papers.

His two books has already been published on computers. His recent publication includes:

1."Some Observations on Open Source Software Development on Software Engineering perspectives", International Journal of Computer Science & InformationTechnology IJCSIT), Vol 2, No 6, December 2010, ISSN No. 0975-3826 (Online), 0975-4660(print).

2."Software Engineering Issues in Development Models of Open Source Software", International Journal of Computer Science and Technology, IJCST Vol. 2, Issue 2, June 2011, ISSN : 2229-4333 (Print), 0976- 8491 (Online).

3."Reliability Issues in Open Source Software", International Journal of Computer Applications, Volume 34– No.1, November 2011, Published by Foundation of Computer Science, New York, USA,ISSN No. 0975 – 8887.

4."Some Observations on Bug Fixing Process and Defect Density of Open Source Software", International Journal of Advanced Research in Computer Science (IJARCS), Volume 23, Number 1, January-February 2012, ISSN 0976 – 5697.

5."Prospects on 'Open Source Software Development' education to Technical Education Students of India", International Journal of Computer Applications 46(12):28-38, May 2012. Published by Foundation of Computer Science, New York, USA, ISSN No. 0975 – 8887.