TBW Research Proposal

Research and Technical Development in Software Industries of Pakistan

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Contents

1 Introuction

Research and development (R and D) refers to the investigative activities a business conducts to improve existing products and procedures or to lead to the development of new products and procedures, Research and development (R and D) is a valuable tool for growing and improving your business. R and D involves researching your market and your customer needs and developing new and improved products and services to fit these needs. R and D in Software House is the discipline of designing and leading R and D processes, managing Rand D organizations, and ensuring smooth transfer of new know-how and technology to other groups or departments involved in improvement.

1.1 Review of the Related Literature

There has been considerable increase in the interest in software industries within developing country contexts in the recent years. Promoters of the school of thought that sees IT and software as a great enabler have argued that information technology in general, and software industry in particular, provides an opportunity to the developing countries to inseparably link themselves with the developed economies of the west. This globalization of work, some believe, is an indication of subsequent phases of globalization that would reduce the differences across the world and provide an equal opportunity for everybody to participate in the global production and creative processes. In many instances, these predictions have also been validated by initial experiences in some developing countries. Most notable of these are India, Ireland and Israel, famously known as the three Is of the global IT revolution and the new entrants in the tier-1 of software exporting nations that already includes relatively more developed, mostly, OECD countries and, and to a lesser degree, China and Russia (tier-2 countries). Following the examples of these tier-1 and 2 nations, are a host of other developing countries, namely, Brazil, Mexico, Malaysia, Sri Lanka, Pakistan, Ukraine, Bulgaria, Hungary, Poland and the Philippines (tier-3 countries) and Cuba, Iran, Jordan, Egypt, Indonesia and Bangladesh (tier-4 countries) and many others (1)

While the boundaries between the countries in this 4-tiered taxonomy are quite fuzzy, primarily by-design but also due to lack of credible data on each, Carmel attempts to differentiate tier-1 countries as having hundreds of companies, more than a billion-dollars of export revenues, and the industry maturity of more than 15 years; tier-2 countries as having at least a hundred companies, exports revenues of more than 200 million, and greater than 10 years of industry maturity; and tier-3 countries as having tens of companies,

more than 25 million in export revenues, and over 5 years of industry maturity. All other aspirants that do not make the cut fall in the tier-4 of the taxonomy (1) (2)

This Paper has discussed and developed a reference model of an interconnected service marketplace ecosystem. The prototypical implementation incorporates findings from an empirical study and lessons learned from research projects, it means this is RandD. According to this study there is a good impact of RandD as the elaborated reference model demonstrates a feasible architecture to establish interconnectivity between service marketplaces without creating. A complete graph network. Interconnectivity is, from a technical perspective, achievable with acceptable effort and with one communication protocol. Cities and citizens are also beneficiaries for example more people are able to access mobility infrastructure and services in an easy manner. All this positively influences noise, heat and emission within cities. and One of the Most important Benefit of RandD is This solution has been developed in such a generic and open manner that all kind of service marketplaces can connect, not only those for mobility services.(3)

There are negative impacts of not using RandD in developing new software technologies.The aim of the article is to show the necessity of Ukrainian national economy and Industry in new software technology and new materials in the context of their innovative development. Situation with RandD in Ukraine doesnt look quite well. The amount of RandD software projects have been decreasing since 2005. Moreover, there is a lack of research in new software technologies. According to this study Ukraine is out of the world scientific main stream because Ukrainian national researches institutions spend the most part of their resources to chemical science and physical science, Ukrainian industry needs other types of software technologies and this can be done by making investments on RandD software Projects. All local investors prefer to support new projects in another sphere (retail, commercial estate), but not to support RandD software projects and that is the reason why Ukraine has no possibility to supply in international market with some types of new software (4) The usage of object-oriented technology (OT) in software industries are commonly using these days. This is a software development technology that uses continue and routine methods or design, construct and assemble software programs. It is a new way of thinking about software in the real world case. The results of this study show that individual characteristics, perception of group characteristics and company characteristics are significantly related to OT adoption, but the individual's perception of the technology is not. This forecast acquire of new technology, such as OT, with 86 percentage accuracy; the results suggest the factors that top management need to focus on new technology in industries (5)

Software has become in dispensability in less than fifty years. Although other industries have followed a same situation, software and its supporting industry are different. The importance of software requires professionals in all fields to deal with both its technical and social perspective therefore, users and producers of software need to discuss software issues. In Software Ecosystem, Messerschmitt and Szyperski address the overlapping and related perspectives of technologists and non-technologists. Software engineers and developers, translate the user's needs into program code; managers utilizes the resources, material and human, to operate the software; industrialists organize companies to produce and distribute software; policy experts and lawyers, resolves conflicts inside and outside the industry and economists, tells that how the software market works. Technical professionals will work to make software more useful and successful. (6)

1.2 Statement of the Problem

Improved organizational placement and decision making, creating a quantifiable framework for RandD provides a common platform for decision making. It improves visibility into demand and the translation of expectations into reality therefore ensuring that speed is in the right direction. Creating a sustainable pipeline flow a focus on generating a sustainable and scalable pipeline improves quality and choice of products. Resources can be adapted to the changing needs and demands placed on RandD department. We need to find out how can we give more time to research and to development activities in Software industry of Pakistan.

1.3 Objectives of the Study

The main objective of the study is to find out how actively Software industry of Pakistan adopt RandD department.

1.4 Research Question

What are the outcomes of implementing of RandD department in Software industry of Pakistan. How many software industries in Pakistan currently working according to RandD.

1.5 Significance of the Study

The research study could provide information about RandD development which includes Technology strategy, Portfolio management, Project strategy,

Proper organization and process, Relationship with internal customers, Relationship with external customers, RandD culture and values, improving decision quality.

1.6 Limitation and Delimitation of the Study

This study covered mainly focus on students of computer science but it will also contain data from professional Developers. The work experiences of the online interviewees were under 3 years. Thus the ability to generalize to the entire population of all software houses in Karachi and beyond its borders is severely limited. The sample is however similar to the population of all the software houses in Karachi and thus can be generalized.

1.7 Research Methodology

A quantitative approach was adopted to conduct this research. Structured close-ended interviews were conducted.

1.8 Sampling Technique

The target population of the study was Computer Science professional and students. From this population, a sample of Computer Science students of FAST, NED and Karachi also professional Computer scientist was selected. This sample was a non-random convenience sample.

1.9 Research Instrument

Following a qualitative approach, structured in depth online interviews was conducted. Using Google form. A set of 14 independent items that were standardized close ended questions were created for the interview. These items were discussed with the field specialist to ensure the instrument's content validity. Later on, at least fifty participants were interviewed.

1.10 Ethical Consideration

Permission for the interview was taken from the institute as well as from the respondents before the interview. The online questions for the interview were shared on Facebook messaged via messenger and Whatsapp, emailed to the respondents prior to the interview and with their understanding the interviews were conducted. The interviews are verified by the interviewee and with their permission are discussed in this study.

1.11 Research Procedure

A qualitative research approach was conducted for this study. Instruments of 14 independent structured close ended questions were prepared for conducting the research. To get in-depth information on the topic non-random convenience sampling was done. More than 50 participants, computer science Students, Developers and also working in the Quality Assurance department of one software houses in Karachi, took part in the research interview. Prior to the interview, the questions for the interview were shared on Facebook , messaged via messenger and Whatsapp and also emailed to the respondents and with their permission the interviews were scheduled. All this process of interview took almost two weeks. Before interviews, respondents were asked for their approval. After receiving approval from the respondents, thematic analysis was done, keeping in the mind the literature review.

2 Literarure Review

There has been considerable increase in the interest in software industries within developing country contexts in the recent years. Promoters of the school of thought that sees IT and software as a great enabler have argued that information technology in general, and software industry in particular, provides an opportunity to the developing countries to inseparably link themselves with the developed economies of the west. This globalization of work, some believe, is an indication of subsequent phases of globalization that would reduce the differences across the world and provide an equal opportunity for everybody to participate in the global production and creative processes. In many instances, these predictions have also been validated by initial experiences in some developing countries. Most notable of these are India, Ireland and Israel, famously known as the three Is of the global IT revolution and the new entrants in the tier-1 of software exporting nations that already includes relatively more developed, mostly, OECD countries and, and to a lesser degree, China and Russia (tier-2 countries). Following the examples of these tier-1 and 2 nations, are a host of other developing countries, namely, Brazil, Mexico, Malaysia, Sri Lanka, Pakistan, Ukraine, Bulgaria, Hungary, Poland and the Philippines (tier-3 countries) and Cuba, Iran, Jordan, Egypt, Indonesia and Bangladesh (tier-4 countries) and many others [1]

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This Paper has discussed and developed a reference model of an interconnected service marketplace ecosystem. The prototypical implementation incorporates findings from an empirical study and lessons learned from research projects, it means this is RandD . According to this study there is a good impact of RandD as The elaborated reference model demonstrates a feasible architecture to establish interconnectivity between service marketplace without creating a complete graph network. Interconnectivity is, from a technical perspective, achievable with acceptable effort and with one communication protocol. Cities and citizens are also beneficiaries for example more people are able to access mobility infrastructure and services in an easy manner. All this positively influences noise,heat and emission within cities. and One of the Most important Benefit of RandD is This solution has been developed in such a generic and open manner that all kind of service marketplaces can connect, not only those for mobility services.[3]

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3 Findings

We have collect the data from 73 individuals from which 72 percentage of our respondents have the age between 18 to 22. 70 percentage are computer science students of FAST, NED and Karachi University while the others are Professional Developer, IT consultant and Software Engineer. 28 percentage respondents have taken formal training program/course for software testing or quality assurance

86 percentage are agreed that Modern Software industry depends upon Research Work

70 percentage respondents believe that it is possible to Apply European R and D Department techniques in Pakistan

67 percentage thinks that Pakistan, Software House who follow the Research work generate more revenue than those who does not

34 of the 73 respondent Conceive that Research work is possible in less Budget Software Industries of Pakistan

84 percentage Strongly agreed that Research has great effect on Software Industry

45 percentage agree up on the fact that Customer satisfaction can be achieved by research work in software

44 agrees Quality of software can be achieved by research in software

More than 20 percentage does not think that Software houses of Pakistan are manufacturing their software Products according to Research work

And 40 percentage disagree that European R and D Department techniques can revolutionized Software Industries of Pakistan

4 Discusiion

Research work has great effect on any modern industry and it has capability to revolution any modern industry .Modern industry shows that only those industries can survive in this modern industrial world who have proper research work in their industries previous researches and so as our research paper has shown the results that it is inevitable fact Modern Software industry depends upon Research Work Although we have certain limitation like we mainly collect the data from computer science students and most of our respondents have not taken any formal training program/course for software testing or quality assurance

One of the reason for European success in at most every modern industry is that they have Research and Technical department which certain rule, regulations and standards which must have to follow and consider in their industry .Pakistan is third world developing country we can use the experience of Europeans apply European R and T Department techniques in Pakistan as in finding shows that most participants are agreed in our findings

Pakistan is 6th largest country of world Despite having a lot of population our financial condition is worse. Our GDP (Gross Domestic Product) stands at 42th position in world. In Pakistan our main reason of every problem is we are facing financial crisis issues so as in the software industry mostly we did not want to spend money on some research work but our finding have completing different results it shows that Software House who follow the Research work generate more revenue than those who does not. Our findings strongly shows that Research has great effect on Software Industry of Pakistan it can be used to generate more revenue in industries by research work and by spend resources on researches even if industry has financial problem because research will not only help to over financial crisis but it will revolutionized industry Customer satisfaction is the most important goal of any industry to achieve financial and market success. Our research shows that it can be achieved by research work in software. The world successful software companies like Google, Microsoft and others has their research department to improve their quality of product and to achieve customer satisfaction. They conduct surveys from customers than use research to improve it .Our finding reveals that Customer satisfaction can be gained by improving Quality of

software by research in software. In Pakistan Software houses are not manufacturing their software Products according to Research work as our finding shows, thats why European R and T Department techniques cannot be able revolutionized Software Industries of Pakistan as they did in Europe which is results of our findings. In order to make success on International Software Industry, our Software houses should have to follow the techniques, skills, rule regulations and standards of European R and T department which is mainly dependent upon Research. It is the only way for our Software industry to survive and make progress in this modern world.

5 Conclusion

Concluding our Research, Our Study is Mainly Based on finding the answer of research Questions, What are the outcomes of implementing of R and D department in Software industry of Pakistan? How many software industries in Pakistan currently working according to R and D? We have Took Sample size of 73 people from 3 different universities within Karachi and we ask them some questions concerned to the Topic and then we analyzed the response and Found out the answers to our research questions that, The research work in the industries of Pakistan have very positive effects on the quality of work and also there are economic benefits of implementing Rand D department in the software industry of Pakistan. And the second questions answer according to our study and analysis of data is that there are a few industries in Pakistan who are working according to R and D like only 30 percentage industries in Pakistan are following R and D standards, and the reason for not following the R and D is that the industry owners of Pakistan are already financially not so good so they do not want to spend money on the research which is the extra thing so they ignore research and jus work accordingly. Our Research study have proved that this thinking of industry owners is wrong research is beneficial in a lot of ways to the software industries in Pakistan.

6 Recommendation

R and T department in Industries must be enforce under Law in Pakistan to achieve worldwide market success .Government must take steps to establish necessary steps as the European Countries are currently taking According to Forbes software industry is currently world 2nd successful industry after health that is only made possible by research. Software Industry of Pakistan must take lesson from worldwide industry and maintain Research De-

partment in every software house. There must be awareness programs like seminars for computer science students regarding importance of Research

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7 Appendix

7.1 Questionnaire Questions

1. Do you have any formal training program/course for software testing or quality assurance
2. Modern Software industry depends upon Research Work
3. It is possible to Apply European R and D Department techniques in Pakistan
4. In Pakistan, Software House who follow the Research work generate more revenue than those who does not
5. Research work is possible in less Budget Software Industries of Pakistan
6. Research has great effect on Software Industry
7. Customer satisfaction can be achieved by research work in software
8. Quality of software can be achieved by research in software
9. Software houses of Pakistan are manufacturing their software Products according to Research work
10. . European R and D Department techniques can revolutionized Software Industries of Pakistan