



NTNU – Trondheim
Norwegian University of
Science and Technology

Outsourcing Software quality

Amanpreet Kaur

Master in Information Systems

Submission date: June 2013

Supervisor: Tor Stålhane, IDI

Norwegian University of Science and Technology
Department of Computer and Information Science



NTNU – Trondheim
Norwegian University of
Science and Technology

Outsourcing Software Quality

Amanpreet Kaur

Submission date: June 2013
Responsible professor: Tor Stålhane, IDI, NTNU
Supervisor: Tor Stålhane, IDI , NTNU

Norwegian University of Science and Technology
Department of Computer and Information Science

Abstract

This thesis report was written for "Outsourcing Software Quality" at NTNU (Norwegian University of Science and Technology), IME (Faculty of Information Technology, Mathematics and Electrical Engineering) and IDI (Department of Computer Science).

The purpose of this report is to characterize the main problems faced while working offshore. Nearshoring and outsourcing are compared, followed by a short discussion on how sometimes companies enter partnerships.

In the first chapter the problem statement and the keywords outsourcing, nearshoring, partnerships and offshoring are described in brief.

In the second chapter research methods are described.

In third and fourth chapter nearshoring and outsourcing are discussed in detail.

Fifth chapter contains data analysis and discussions which is followed by results and conclusions in the chapter six.

Appendix is added at the end for reference.

The report is primarily solved by interviews and discussions.

The report is written in the period from 16.01.2013 to 20.06.2013

Acknowledgement

I would like to thank my supervisor, Professor Tor Stålhane for his help and giving me the opportunity to work with him. He gave me feedback on my work from time to time which facilitated my research. Because of his help, I could travel to India and conduct interviews which helped in my research. I would also like to express my gratitude to Anca Deak who provided me assistance in the research process. I would also like to thank the interviewees at Evry, Capegemini, GENX INFOTECH, A1 technology, Span Infotech, Accenture and TCS who participated in the interviews and thus became a large part of the research.

Contents

List of Figures	ix
List of Tables	xi
1 Introduction	1
1.1 Problem Description	2
1.2 State of the Art	2
1.2.1 Outsourcing	2
1.2.2 Nearshoring	4
1.2.3 Partnerships	4
1.2.4 Offshoring	4
2 Research Process	7
2.1 Research Questions	7
2.2 Interviews	7
2.2.1 Interview Guide	8
2.2.2 Data Registration	8
2.3 The Choice of Interview	9
2.4 Reporting	10
3 Nearshoring	11
3.1 Nearshoring	11
3.2 History of Nearshoring	11
4 Outsourcing	15
4.1 Background and Motivation	15
4.2 Benefits of Outsourcing	16
4.3 Problems with outsourcing	17
4.4 Agile Development and Outsourcing	18
4.5 Customer satisfaction-oriented model for outsourcing software quality management using Quality Function Deployment (QFD)	20
4.6 House of Quality [ZP12]	22
4.6.1 The Voice of the Customer	22

5	Discussion and Data Analysis	25
5.1	Interview Analysis	25
5.2	Data Analysis	27
5.3	Discussion of QFD Model	30
6	Conclusion	33
6.1	Results from Interviews and research	33
6.2	Answers of Research Questions	35
6.2.1	Why do organizations outsource their business process? . . .	37
6.3	Future Work	37
	References	39
	Appendices	
A	Appendix	41
A.1	Interview with Evry	42
A.2	Interview with Managing Director of GENX INFOTECH (Company in NewZealand whose development office is in India)	44
A.3	Interview with the Vice President of Capegemini	45
A.4	Interview with Assistant System Engineer (TCS, USA)	47
A.5	Interview with A1 technology (India)	48
A.6	Interview with Accenture(India)	57
A.7	Interview Guide	58

List of Figures

2.1	The Research Process.	8
2.2	Communication Effectiveness.[Amb]	10
3.1	Global Distribution of Nearshore destinations based on dataset analyzed [CA07].	14
4.1	Who uses IT outsourcing. [Mey06]	16
4.2	Incremental benefit of agile processing in Outsourcing 1 [MB04]	19
4.3	Incremental benefit of agile processing in Outsourcing 2 [MB04]	19
4.4	Customer satisfaction-oriented model [XWW08]	21
4.5	House of Quality Sequence.[hoq]	23
5.1	Hofstede Model.[hof]	28
A.1	Economic Growth.	52
A.2	Bug Classification Growth.	54

List of Tables

3.1	Constructs Shaping the Definition of Nearshoring. [CA07]	13
4.1	Overall importance rating of offshore outsourcing benefits [Dja05]	17
6.1	Overall importance rating of offshore outsourcing benefits[CA]	37

Chapter 1

Introduction

The world has become a global village and globalization allows people to communicate and share ideas, cultures, thoughts and business. The emerging technology especially, the internet has opened new doors for business in the field of IT and engineering. Distance is becoming less important these days. Offshoring IT work is a great outcome of globalization. Even though distance is becoming less important, still some communication gaps and cultural differences exist between the companies. The key points of globalization are as follows:

- The most important and recent one is globalization of trade in service.
- The friendly business environment, and technology parks made by many countries invite businesses from others countries. India and Philippines are great examples.
- Emerging number of engineers in the market especially from China.
- Advanced technology which allows people to communicate using several tools for zero cost i.e the free tools.
- Standardization of software development practices and tools. Many companies have their own standards for software development but, there are also many companies who are adopting the Global Software Development (GSD) domain to reduce software development cost [KNA11]. GSD domain refers to software undertaken at geographically distributed regions that has distance, time zone and national culture as the main cause for co-ordination.
- Wage difference which provides a huge benefit to companies for lowering the cost.

Software development has become a key business driver in today's industry whether it is ticketing system, online transactions, mobile telephones, sensitive data processing,

marketing or controlling hardware. Developing quality software has become an important goal for all software companies. Growing competition among them and the desire to gain a larger market share has opened new doors and challenges for developers and employees making it difficult for clients and customers to make the right choices. Because of growing competition, client doesn't understand who will give them better quality in less time and cost. E.g. There are a number of companies working in India, China and East Europe. The growing competition makes harder for clients to decide where to get, flexible and quality products with efficient performance in low cost and short time. Competition is growing day by day. Now it's been almost 20 years since the first CIO (Chief Information Officer) began sending work offshore to IT service industry in India.

This report is written as a continuation to the work done by me for the last semester's project "Outsourcing Software Quality". The basis of research for the project was research papers, literature and interviews that were conducted by me onshore. The work is primarily based on interviews, especially from India – The Hub of Outsourcing and also from Norway.

1.1 Problem Description

The goal of this study is to:

- Identify the differences of thought process of onshore and offshore people working in different companies in different parts of the world
- Find methods to cope with cultural differences.
- Identify methods to cope with other found problems.
- Can the Quality Function Development (QFD) model be used to increase the quality of product and satisfy customer.

1.2 State of the Art

1.2.1 Outsourcing

This is a process which is performed by management within or outside an organization, located in other parts of the world. Within or outside an organization refers to the same company's office offshore or another company hired for some project. A third party is involved to perform the functions or part of the process. For example: Tata consultancy services, an Indian company, collect their requirements in US while, the whole development is done in India.

In other words, we can define Software development outsourcing as a contract-based relationship between client and vendor organizations in which a client(s) contracts out all or part of its software development activities to a vendor(s), who provides agreed services for remuneration. Outsourcing promises cost reduction as developers are hired from outside the organization or offshore with lesser salaries [KNA11].

Outsourcing has both pros and cons which are discussed in chapter 4 in detail. Here the key advantages and disadvantages are highlighted which should be considered before contacting the service provider.

The Advantages of Outsourcing

- **Swiftness and Expertise:** Most of the times tasks are outsourced to vendors who specialize in their field. The outsourced vendors also have specific equipment and technical expertise, most of the times better than the ones at the outsourcing organization. Effectively the tasks can be completed faster and with better quality output
- **Concentrating on core process rather than the supporting ones:** Outsourcing the supporting processes gives the organization more time to strengthen their core business process.
- **Risk-sharing:** one of the most crucial factors determining the outcome of a campaign is risk-analysis. Outsourcing certain components of your business process helps the organization to shift certain responsibilities to the outsourced vendor. Since the outsourced vendor is a specialist, they plan your risk-mitigating factors better.
- **Reduced Operational and Recruitment costs:** Outsourcing eludes the need to hire individuals in-house; hence recruitment and operational costs can be minimized to a great extent. This is one of the prime advantages of offshore outsourcing [add].

The Disadvantages of Outsourcing

- **Risk of exposing confidential data:** When an organization outsources HR, Payroll and Recruitment services, it involves a risk if exposing confidential company information to a third-party.
- **Synchronizing the deliverables:** In case you do not choose a right partner for outsourcing, some of the common problem areas include stretched delivery

time frames, sub-standard quality output and inappropriate categorization of responsibilities. At times it is easier to regulate these factors inside an organization rather than with an outsourced partner.

- Hidden costs: Although outsourcing most of the times is cost-effective at times the hidden costs involved in signing a contract while signing a contract across international boundaries may pose a serious threat.
- Lack of customer focus: An outsourced vendor may be catering to the expertise-needs of multiple organizations at a time. In such situations vendors may lack complete focus on your organization's tasks [add].

1.2.2 Nearshoring

Nearshoring occurs when the travelling distance is less than three or four hours. It occurs normally in those countries or regions where there is a small time difference and travelling is easy. In Europe, many companies are doing nearshoring

Nearshoring is a type of offshoring and refers to the outsourcing of business or IT processes to providers in nearby countries. Numerous companies now offshore their IT services and back-office processes to CEE (Central and Eastern European). Above all they value the closeness of geographical, cultural and language ties. Compared to traditional offshoring locations, CEE wages are mostly higher and communication more efficient. This suggests that the region will establish itself specifically in the segment for more sophisticated services. For simpler IT services the comparative advantage lies with the traditional offshore locations such as India [Mey06].

1.2.3 Partnerships

Initially companies looked for cost savings. Then companies started to look for extra resources and assets. Companies are now looking for strategic benefits and better defined business impacts from their offshoring relationships. To attain strategic benefits many companies start partnerships in order to minimize risk. Partnership leads to either win-win situation or a loss-loss situation to both the parties.

1.2.4 Offshoring

Offshoring is when activities of a company are performed in another country. It can be some external company or the same company with an office located in other country. It is a type of outsourcing in which processes of business are relocated to a foreign country to lower the costs.

Lessons of Offshoring [SO13]

1. A single provider may not be enough:

In the last decade many of the offshore outsourcing customers used to deal with single service provider to handle application development, maintenance, service desk, end user computing, network and IT service management. But today many of the services are pulled onshore because getting everything from one service provider creates problems sometimes, says Criag Wright, principal with outsourcing consultancy Pace Harmon.

2. Too many vendors spoil the Model:

Companies should not go too crazy on the multi-vendor model advised by Phil Fersht, CEO of outsourcing analyst firm HfS Research. Too many clients can stuck in complex and slow moving situations, where they are trying to manage too many parties.

3. . Invest in Good Governance:

Governance is the key to the success of the program, and the organizations tend to underestimate the importance of Governance, says Everest Group's Arora. The most successful offshore arrangements give careful attention to management personnel who move from offshore to onshore and vice versa, regular meetings between onshore and offshore teams, tools and procedures for effective communication, says Paul Brown, Partner with law firm Mayer.

4. . Be kind to Offshore Partners:

The lure of early offshoring was the promise of lower costs. But, at times the lowest cost solution is the lowest quality, says Arora, a outsourcing company consultant. Hence being fair in pricing will be important to retaining quality.

5. Some things are meant not to go offshore:

The industry has developed immensely, hence so much indeed is suitable for offshore, but there are some niche services that seem to be best onshore or nearshore, says a company personnel.

Chapter 2

Research Process

This project was initiated by a detailed study of the previous research done on Outsourcing and Nearshoring in general. The research methodology followed in this project is shown in figure 2.1.

2.1 Research Questions

The main emphasis of this research is on the following questions and is based on the research paper [KNA11]

1. Which barriers do software outsourcing companies face?
2. Do the identified barriers vary from continent to continent?
3. Do the barriers vary with the size of the organization?
4. Do the barriers vary over time?
5. Is it beneficial to have nearshore centre along with offshore centre?
6. Can the QFD model assist in increasing the quality and satisfy customers?

2.2 Interviews

The main source of information was the interviews conducted with people who were able to describe the problems and whose experience and knowledge were used as tools to find solutions. This method was selected as it is cheap and has a clear advantage since it is quite flexible and allows follow-up questions, which were never thought of before the interview started.



Figure 2.1: The Research Process.

2.2.1 Interview Guide

An interview guide is a set of questions written down before conducting interviews. The same set of questions were used for all the interviews (Refer Appendix A.7). However, according to the situations, the questions were molded on the spot by adding follow up questions in face to face interviews. It was important to make the questions flexible and relevant to each interview that was conducted. Each interaction led to new insights that were used to make improvements to the quality of the next set of questions. Follow-up questions in the second round of interviews were more detailed as they captured the understanding and learnings derived from the previous rounds of interviews.

2.2.2 Data Registration

During interviews it is important to register data as fast as possible. It can be done either by recording video or audio of the interview. Making notes of the interview is another option. Kristan Ringdal states there are advantages and disadvantages with both these methods [GNR99]. The advantage of recording the interview is that all the information is captured and can be easily retrieved. The disadvantage of recording is that it is time consuming to transcribe the results afterwards. The whole recording needs to be converted to text. On the other hand the advantage of making notes is that you need not spend time to convert it to text afterwards. The disadvantage is that you may miss assessing important information which cannot be retrieved again.

After assessing the advantages and disadvantages of both methods, it was decided

to use a combination for the purpose of this project. Permission was sought from the interviewees to record the interaction. Besides this, during the course of the interview, all important points were noted in bullet points, to save time in converting the full audio into text.

2.3 The Choice of Interview

The interviews were held in different ways depending on the availability of the persons concerned. Some interviews were held face to face eg Evry and Capegemini in Norway (Refer Appendix A.3, A.1). One interview was held on Skype GENX INFOTECH, a company in NewZealand whose development office is in India (Refer Appendix A.2). The last interview was done via email. Assistant System Engineer (Tata Consultancy Services, an Indian company who has office in US to collect requirements) answered the questions through email (Refer Appendix A.4). These interviews were conducted in 2012. They were followed by interviews held in India in this semester eg A1 technologies, Capegemini, Span Infortech. Some interviews were also held through email this semester too, for instance Accenture. Towards the end, I also got a chance to collectively conduct interview with three employees of Capegemini in Norway. This was conducted as group discussion. This, in particular, was a very productive meeting in which everyone expressed their point of view freely.

While doing the interviews, it was observed that face to face interview is the best way of communicating with the other person. The main reason for this is that the answers from the other person sometimes make you pose good follow up questions. Even though, you can talk directly to another person through Skype, there is still a communication gap. The answers that you get are quite short and you get limited information. I would, however still consider it better than e-mail exchange, as through email exchange you get quite short answers even though you still get some knowledge.

Research suggests that good communication is the third most important trait for software projects success. Communication is important at all stages of the project life cycle, both within company and with external bodies. Lack of communication will often cause project failures.

Effective communication increases the quality of a project. According to the experience gained in discussions and interviews it was observed face to face meeting is the most effective way of communication. In group meetings, common goal accepted by all the participants is characteristic of good communication. Decisions should be based on the group's opinion. Management should play an important role in increasing efficiency of communication. The communication effectiveness is shown in the figure 2.2.

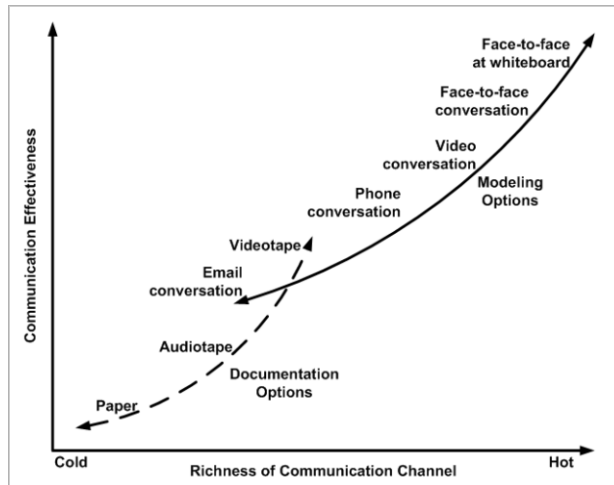


Figure 2.2: Communication Effectiveness.[Amb]

Besides personal interviews, discussions were held with some of the company personnel. The discussion topics were as follows:

1. Face to Face communication is the best way to communicate.
2. Motivated employees are the important factor for any project to be successful.
3. The culture in which one is brought up. Culture affects the way of working.

The interviews and discussions are analyzed further in the discussions chapter.

2.4 Reporting

At the end of the research process, the results and conclusions have to be reported and the possibilities for future work is suggested. A new model can be proposed based on the research for improving the problems identified.

Chapter 3

Nearshoring

3.1 Nearshoring

Nearshoring is one type of offshoring and refers to outsourcing of business or IT processes to providers in nearby countries. Nearshore emerged as a reaction to the main offshore destination: India. India, which is geographically distant from its major clients in the US and Europe, is reframed as a “farshore” territory, while most other destinations which are geographically closer to their major clients can be labeled “nearshore.”

It is also observed that – despite the current ideology of virtuality, in which distance does not matter much – technology firms create large development centers and locate them within dense agglomerations of other technology firms. It is seen in Bangalore, in Silicon Valley and in the new high tech parks of China.

Based on all these evidences, I believe that distance still matters.

Consider, for example, that within a few years, IT providers based in North America and Europe have built many “Offshore Development Centers” (ODC) that offer their clients a choice of locations: farshore and nearshore. Similarly, top Indian firms responding to competitive threat of nearshoring have been expanding their global presence from some years and are now building offices in Europe and North America [CA06].

3.2 History of Nearshoring

The term “nearshore” made its earliest appearance in the software field in a story about an entrepreneurial software development venture called PRT that was set up on the Caribbean island of Barbados in the years 1995-1998. The PRT founder was a colorful marketer and emphasized the term Nearshore in promoting his venture.

Already in this period, the usage of the word “near” referred to proximity to the US, while “far” related to distance from India [CA07] (Refer Appendix A.1).

Several papers analyzed during the course of this work suggest that, nearshoring is common in 46 countries. Nearshoring is also a clustered phenomenon. There are three main clusters. One consists of 19 nearshore nations surrounding the USA and Canada. Another, with 25 Nearshore nations surrounds the wealthy nations of Western Europe. The third cluster services Japan and Korea. The geographic region is shown in the figure 3.1.

In table 3.1, a geographical context is suggesting that convenience of accessing the location is the major aspect when company decides to have office outside country but not very far geographically. But sometimes the nearshore company can be an external company. Of the 150 texts reviewed by various authors, less than one-third (29%) define the term nearshore. Of these, (93%) claim nearshore to be associated with geographic proximity between client and sourcing locations. In fact, just over half of these definitions (58%) use only this construct in defining nearshore. However, it is clear from the use of the term across texts, that other constructs are implicit in the descriptions given of nearshore attributes. In some sources, nearshore assumes primarily a geographical context, thus suggesting that convenience of accessing the location is the major aspect being promoted. In other cases, where the proximity of the country is not immediately obvious, for example, Argentina to the U.S., nearshore assumes primarily a temporal slant or is linked mainly to cultural/linguistic factors.

Finally, less common in usage, are political/economic and historical linkages drawn between client and nearshore locations [CA07].

Table 3.1: Constructs Shaping the Definition of Nearshoring. [CA07]

Construct	% of text using this Constructs	Characteristics of Nearshore destination	Examples from the text
Geographic	59	Physically closer and takes less travel time to reach	moving parts of your work to countries that cost less but are not too far away
Temporal	31	Some time zone overlap time zone services to US clients	focus will be on delivering same
Cultural	41	Similar cultural characteristics such as way of life, or way of doing business	you need an outsourcing contractor with a similar corporate culture and way of doing things to your own
Linguistics	47	Shares linguistic similarities such as adopting English as the language of business, or sharing the same native language	Forty million Americans speak Spanish responsible for a new breed of outsourcing company that aims to take advantage of its Spanish origin
Political	28	Political alignment or economic grouping	Nearshoring partners can take advantage of the NAFTA treaty, it is much easier for them to gain access for visas
Historical	11	Shares some historical perspectives such as colonia history, diaspora linkage	Morocco and Tunisia, former French colonies, will remain focused on the French Market

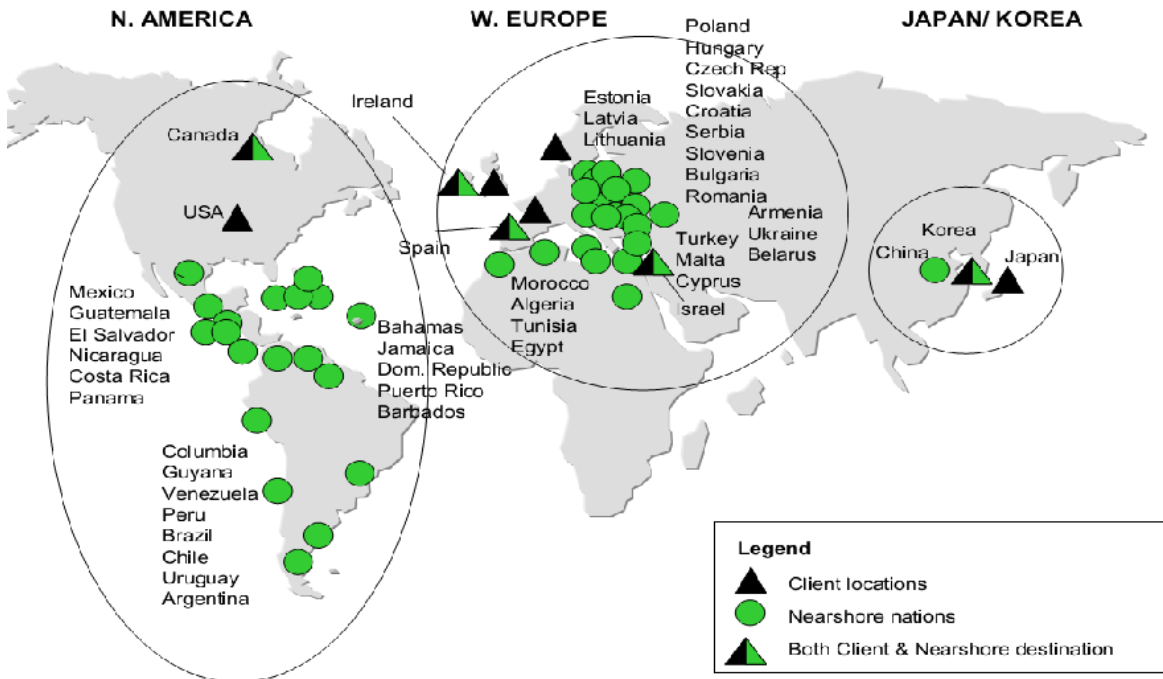


Figure 3.1: Global Distribution of Nearshore destinations based on dataset analyzed [CA07].

Chapter 4

Outsourcing

4.1 Background and Motivation

Outsourcing has become an important issue for the information and communication (ICT) industry and related services. Despite the fact that there has been a lot of debate on business benefits versus risks, outsourcing has become a quite widespread practice [AVS⁺09].

Outsourcing is an activity where the outsourcing company decides to handle whole or part of its ICT operations by purchasing services from some external ICT-suppliers. Such services may include software development, software testing, software maintenance and operation. The suppliers will take care of some of the activities that the outsourcer used to perform itself. Some large scale enterprises have outsourced all the ICT operations to third party suppliers. In some cases the supplier organization is from the same country as the outsourcer, but in many cases the supplier is from another country. One of the most popular places in which those suppliers may be located is India. The figure 4.1 shows the areas where offshore outsourcing is used the most. The key points that are necessary in Outsourcing are:

- Freedom
- Fun
- Trust
- Team Spirit
- Honesty
- Boldness
- Modesty



Figure 4.1: Who uses IT outsourcing. [Mey06]

4.2 Benefits of Outsourcing

1. Labour Cost Reduction

Offshore outsourcing obviously benefits in reducing labour cost. Surveys indicate that offshore outsourcing benefits 15% to 40% in terms of costs. Through the interview with Capgemini, it was brought to my attention that, the labor cost of offshore Indian employee is one-tenth of the Norwegian employee.

2. Access to Competence

One of the main benefits is access to competence. Educated engineers, problem solvers, and innovative scientists are hired in a much lesser cost. Other reason is quality of education. Companies check the technical skills based on the requirements of the project.

3. Improved flexibility and agility

Companies Offshore outsourcing helps companies to be flexible and agile by providing a reliable yet adaptable stream of workers to reduce the time it takes to start and complete projects.

4. On time delivery

In case of emergency , companies can hire more persons in order to increase the speed of work.

5. 24*7 Availability

Offshore centre in India, is 12 hours ahead of US who will work when it is night in US which results in providing 24*7 hours working environment , thus more productivity.

Another benefit of Offshore centre is that, there is always backup of hardware and software resources in case of any knid of disaster.

Overall ratings of offshore outsourcing benefits is shown in table 4.1.

Benefits	Importance Rating
Labor Cost reduction	4.9
Access to host country skills	4.9
Improved flexibility and agility	active 3.7
Taking advantafe of host country's universities	3.1

Table 4.1: Overall importance rating of offshore outsourcing benefits [Dja05]

4.3 Problems with outsourcing

There are certain problems that companies face during outsourcing.

1. Real Cost:

There are some hidden costs that many companies do not consider. E.g. when companies schedule meetings with companies from where they are outsourcing. They count only the meeting time and driving back time. But sometimes the developer had spent hours on understanding the problem and ways to fix it.

2. Time Factor:

In case of emergency deliveries, companies have to depend on the outsourced companies.

3. Network Problems

In case of online meetings, sometimes network problems disturb the meetings. Even though companies have dedicated connections, still network causes problems.

4. Cultural Problems

This is one of the main problems that companies suffer, even though, some people find it interesting to work in a multi-cultured environment. However, in my opinion this is the biggest challenge that companies are still facing.

5. Communication

As discussed, previously communication is also one of the main problems of outsourcing. Communication gaps can affect the quality a lot so it is important factor to improve.

6. Lack of Responsibility

Offshore work sometimes tend to lack of responsibility among the employees.

7. Reporting and Management

Management has hard time in dealing with two sides of the world together. There can always be problems in documentation unless there are strict protocols to be followed by the companies.

Besides, the problems above mentioned Outsourcing is not considered a good in some places, as in Scandinavian countries and also in US , the people believe that outsourcing increases unemployment. Because natives believe instead of paying high taxes, they suffer.

On the other hand, countries like India are getting employment because of outsourcing.

4.4 Agile Development and Outsourcing

Agile development is at least in theory structured and disciplined, fast paced, iterative and incremental development. This method focuses on delivering business value in frequent increments . On the other hand every business's main goal is to gain profits. This can be done by outsourcing. In today's world many IT companies are either using offshore development or agile development or both. However, few companies are using the combination of both as it is hard to make the transition from offshore to agile development. The literature shows that implementation of agile development on distributed projects is scarce [GK10].

Some companies are gaining benefits by using agile developments. They are getting benefits in terms of person hours , overall quality, efficiency, team morale and relationship between IT and business staff.

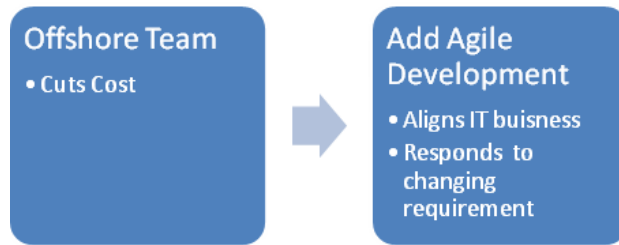


Figure 4.2: Incremental benefit of agile processing in Outsourcing 1 [MB04]

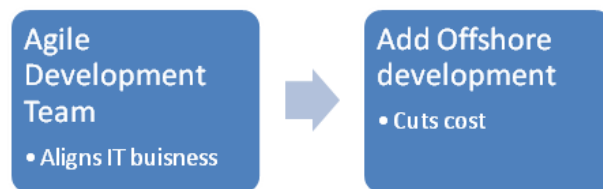


Figure 4.3: Incremental benefit of agile processing in Outsourcing 2 [MB04]

Early agile adopters have started quantifying their benefits. Some companies have found that after using agile development they have increased customer satisfaction by a certain degree. In my opinion agile development can be beneficial in near shoring and also easy to implement. E.g. In Europe, near shoring is one case where agile development is easy to implement and when it takes place results in better customer satisfaction [PL06].

The figures 4.2 and 4.3 shows the incremental benefit of agile processes in Outsourcing:

4.5 Customer satisfaction-oriented model for outsourcing software quality management using Quality Function Deployment (QFD)

In order to overcome the limitations of the software quality management, a customer satisfaction-oriented model is proposed for outsourcing software quality management (OSQMM), as shown in figure 4.4 [XWW08]. This model is constructed on the basis of cross-cultural communication theory and practices of software outsourcing process, integrating QFD, ISO9001, CMM/CMMI and software quality control specifications.

The intent of OSQMM is to improve the outsourcing software development process. Cross culture communication theory and multiple hierarchical bi-directional communications are used to obtain CRs (Communication Requirements). Then, by using QFD, CRs are transferred into technical specifications and deployed step by step to map CRs to every stage of software development. Furthermore, a series of processes and control objectives are set, and they are finally reflected in the process monitoring measures and the quality management documents of quality control specifications. CRs are maximally satisfied by reconciling and realizing these objectives. The model consists of one axis and four sub-models. The axis is the overall process of obtaining, transferring, mapping, and realizing CRs. The four sub-models are hierarchical bi-directional communication sub-model, requirements analysis sub-model, requirements mapping sub-model and software quality control sub-model.

The model is divided into four sub models. The sub model on the left side of the figure shows the communication platform between supplier and owner. The supplier and owner recognize each other through three levels (primary recognition, thorough recognition and recognition convergence) and several methods for communication (remote communication, face-to-face communication, etc). Then both parties can reach an agreement on CRs. In this way problems related to cross cultures can be solved.

Then next part of the model is Requirement analysis. CRs obtained from communication platform helps to transform original data to normative CRs. The KJ method is then (Quality management Technique) is used to prioritize the CRs.

In the third part of the process, requirements are mapped. QFD prioritize TCs (technical characteristics). For each TC, the TC's importance rating can be calculated as:

$$TCI_j = \sum_1^m cr_i \cdot R_{i,j} \quad (4.1)$$

4.5. CUSTOMER SATISFACTION-ORIENTED MODEL FOR OUTSOURCING SOFTWARE QUALITY MANAGEMENT USING QUALITY FUNCTION DEPLOYMENT (QFD) 21

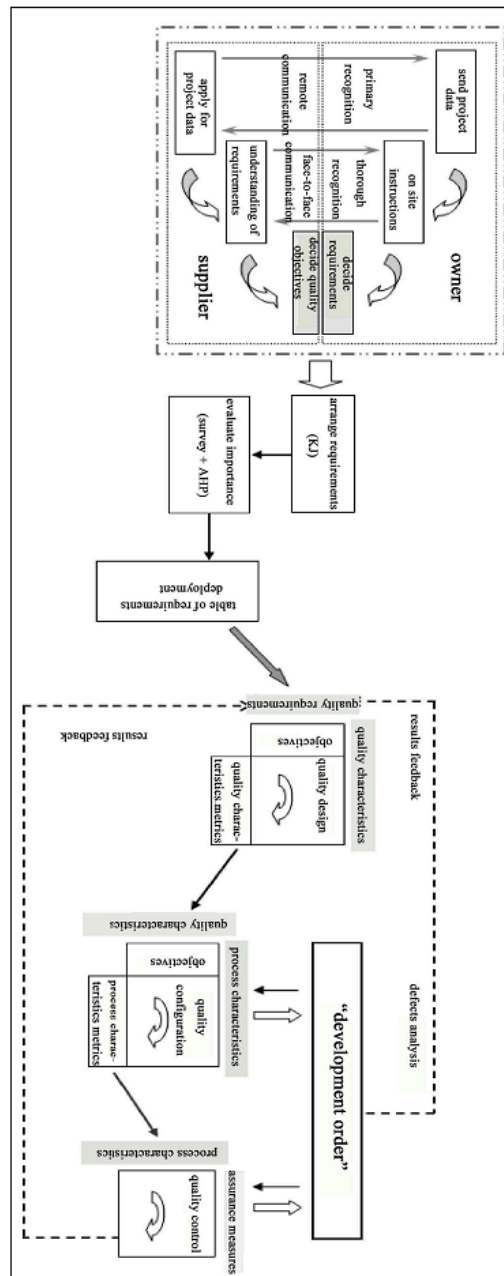


Figure 4.4: Customer satisfaction-oriented model [XWW08]

where TCI_j is the degree of importance of the technical characteristic j ($j= 1, \dots, n$), cri the relative weights of CR_i ($i= 1, \dots, m$), and R_{ij} is the relationship coefficient between CR_i and TC_j representing the strength of the relationship.

Finally, by using quality control sub-model, important process control points achieved above is monitored and assured.

4.6 House of Quality [ZP12]

The House of Quality is the primary planning tool in the QFD approach is shown in the figure 4.5.

It is a conceptual map that provides the means for interfunctional planning and communication of customer requirements and technical responses. In the HOQ, the relative weights of customer requirements are obtained from the customer themselves. The question ‘How important is the requirement to the customer?’ is answered directly by market research. Here, the customers need not make pairwise comparisons but are asked to give each requirement a number expressing relative importance according to their own considerations and criteria; this is the basis of the prioritization matrix method in the HOQ. The steps to build the HOQ are:

- list customer requirements (whats),
- list technical characteristics (hows),
- develop a relationship matrix between whats and hows,
- develop an interrelationship matrix between hows,
- develop prioritized customer requirements,
- develop prioritized technical characteristics.

4.6.1 The Voice of the Customer

- Identifying Customer Needs

The first task is to identify customer needs, which is description in the customer’s own words of the benefits they want the product or service to provide. These

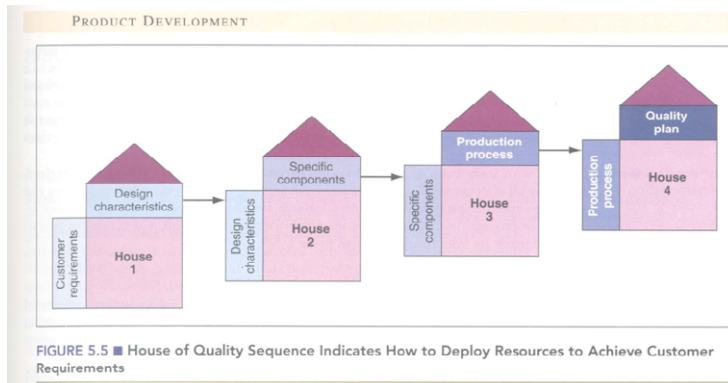


Figure 4.5: House of Quality Sequence.[hoq]

needs are usually determined by personal interviews and/or focus groups, which bring together six to eight customers for a facilitated discussion.

– Structuring the needs

To manage the customer needs, the team has to structure them into hierarchy. Strategic needs are top 5 to 10 primary needs. Secondary needs are extensions of primary needs.

– Prioritizing the needs

Prioritizing helps the QFD team, balance the cost of fulfilling a need with the benefit of customer. If two needs are equally costly, then the need that is more important to customer should have higher priority.

– Comparing Customer Perception

This information is obtained through survey of customers [Hau93].

Similarly, following the QFD model's all four steps, engineers can satisfy the customer.

QFD model is discussed in chapter 5 that, why I, recommend to use it when is not commonly used tool.

Chapter 5

Discussion and Data Analysis

5.1 Interview Analysis

Interviews were conducted face to face by me with people involved in outsourcing to understand the internal environment in the industry and to identify the current trends in software development. Based on the interviews, it was identified the area of cooperation (the most important area), which the consultants perceived as problematic. I have found four such areas; communication, problem-solving, competency profiles, and cost, quality, and on-time delivery. In this analysis most of the experience of Norwegians, French and Indians are explained based on the interview held in Capgemini and sources I received from them (Refer Appendix A.3). In addition to Capgemini, interviews were held in Evry, Span Infotech, A1-Technologies and Accenture.

1. Communication

When communicating, both European and Indian consultants-, have problems understanding the underlying message of the other party, which is hidden in the communication.

European consultants claimed that there are some problems with communicating with Indian colleagues. The Indian consultants, however, did not express that they have any problems communicating with colleagues. Norwegian consultants said that the daily communication with Indian colleagues often was difficult, because they perceived that their Indian colleagues not always understood their e-mails. The Norwegian consultants expressed that they also sometimes had problems understanding what their Indian colleagues really meant when they were communicating. Many Norwegian consultants told that they perceived that their Indian colleagues often said “yes”, even if they meant “no”. Indian consultants also said that they sometimes had problems saying “no”, and even though they knew they did not have time to do a task, they

said “yes”. The Indian consultants explained this by stating that they felt great discomfort associated with saying “no”.

2. Problem Solving

The consultants from different countries prefer to solve problems in different ways.

Indian consultants said that they preferred to solve problems within a context where tasks are well defined, closely followed up by leaders, and getting a lot of feedback. In a work situation they preferred little autonomy and little independence.

On the other hand Norwegian consultants in a work situation preferred freedom and independence. They preferred to define the task themselves, and they preferred not to be closely followed up by leaders. When cooperating, these differences in approaches to problem-solving create a bad climate for cooperation.

To handle this kind of situation, management should act as the bridge between the two sides. It should talk on both sides and try bridge the gaps. They should listen both sides with patience and then analyze the problem and solve the problem by making both sides happy.

3. Competancy Profiles

Capgemini India and Capgemini France focus on different competency profiles. The Indian consultants are specialists, the French consultants have breadth competency.

French consultants pointed out that they sometimes have problems cooperating with Indian colleagues when working on low-budget projects where the available amount of resources are low. In such situation, it is desirable to have consultants that can solve many types of problems. French consultants told that this had not been a problem when only French consultants were working in the team, because they perceived that most French consultants have breadth competency. This meant that one French consultant could solve many types of problems. However, when working together with Indian consultants, the French consultants perceived their Indian colleagues as specialists, with great competency to solve a single type of problem. In these cases the French consultants found it difficult to keep the budget, because it was necessary to involve many Indian consultants to complete the entire task

4. Cost, quality, or on-time delivery

Both Indian and Norwegian consultants perceive that the other party does not focus on quality. Norwegian consultants said that sometimes it was difficult to cooperate with Indian consultants, as they often received products from them, that they perceived had bad quality. On the other hand, Indian consultants pointed out that the Norwegian consultants mostly care much about on-time delivery, and do not care much about quality. On the contrary, according to Indian consultants, they deliver quality product. Both Norwegian and Indian consultants said that this could create conflicts. The Norwegian consultants said that such conflicts were highlighted when they asked Indian colleagues to write offers. They then perceived that their Indian colleagues were focusing too much on the fact that they were a low-cost alternative, thus focusing on project costs. The Norwegian consultants said they preferred their Indian colleagues to focus more on what is special about the customer. Vice President of Capegemini referred that mismatch of quality is not a one side fault. It can stem from miscommunication in the requirement phase. Similarly Chief Consultant of Evry referred that, they have experienced from fantastic results to waste of time (Refer Appendix A.3, A.1). Thus both parties focus on their own strong points.

To solve this kind of situation management can hire more people from India. In this case product can be delivered on time and Indian developers can get more time to do their task since a task can be divided among more persons. In the end, they can discuss and integrate the project. In my interview with Capegemini, the vice president told me that when they have deadlines they put more people from India on the project, so that they can deliver the product on time. So here the work culture of Indians and Norwegians are in conflict with each other.

5.2 Data Analysis

Based on the findings, the analysis is highlighting the four core topics [SA90]. They are as follows and is shown in the figure 5.1

1. Power distance
2. Uncertainty Avoidance
3. Individualism versus Collectivism
4. Masculinity versus Femininity

Using elements from sociological theory, possible causes were related to the cooperation problems by me. The highlighted four topics are all related to Hofstede



The image shows a table titled "Hofstede's Cultural Dimensions" with a blue header and a light blue background. The table contains six rows, each with a dimension name and a brief description of what it represents in a culture.

Hofstede's Cultural Dimensions	
Individualistic / Collectivistic	How personal needs and goals are prioritized vs. the needs and goals of the group/clan/organization.
Masculine / Feminine	Masculine societies have different rules for men and women, less so in feminine cultures.
Uncertainty Avoidance	How comfortable are people with changing the way they work or live (low UA) or prefer the known systems (high UA).
Power Distance	The degree people are comfortable with influencing upwards. Accept of inequality in distribution on power in society.
Time Perspective	Long-term perspective, planning for future, perseverance values vs. short time past and present oriented.
Indulgence / Restraint	Allowing gratification of basic drives related to enjoying life and having fun vs. regulating it through strict social norms.

Figure 5.1: Hofstede Model.[hof]

model and Maurice theory. The analysis is mainly based on these two theories [Hof80, MSW80].

- Geert Hofstede's (1980) theory on differences between national cultures. Hofstede argues that all countries have a national culture that is different from other countries. It was analysed in all of my interviews, that all cultures are different. Every culture has different working style and different understandings of the same problem. Dealing with different cultures is a challenge that all the people have to deal with when working internationally. The Hofstede's model was related, as this model mainly deals with the cross cultural differences that come across between different people from the discussions and interviews. Cross cultural differences was analyzed as one of the main problem in outsourcing. So, the four core causes are related with the interviews and discussions.

The first core cause from the model is Power Distance. It was observed during the research that the less powerful members are hesitant in answering the questions, whereas the powerful members or organizations are more open. While conducting the interviews, it was noticed that personnel in Norway are

more open compared to Indian personnel's.

The second core cause is Uncertainty Avoidance. People in cultures with high uncertainty avoidance tend to be more emotional. They try to minimize the occurrence of unknown and unusual circumstances and try to proceed with careful changes step by step by planning and by implementing rules, laws and regulations. In contrast, low uncertainty avoidance cultures accept and feel comfortable in unstructured situations or changeable environments and try to have as few rules as possible. For instance – Indian people think twice before speaking at higher authority because of cultural barriers whereas Norwegians are very open when discussion with higher authorities.

The third core cause is Individualism versus Collectivism. In individualistic societies, the pressure is put on individual achievements. People are expected to stand for themselves and the immediate families, whereas in collective societies, there is no pressure on individual achievements. For example- in Indian culture, students are pressurized from childhood to stand first in class and there is lot more pressure for academics than sports or other curriculum activities. In Norway, there are no ranks in class till high school and thus, they do not have any pressure.

In one of the discussions with Capegemini personnel's, an Indian who is working in Norway the last three years stated that he can see the difference between his kids in how they are brought up. According to him, his daughter who spent six years in India is different from his son who came to Norway when he was very young. He observed that his son is more open to ask while the girl is a little hesitant as she was taught in the school in India.

The last core cause is femininity versus masculinity. This was also noticed in the same discussion with Capegemini personnel who stated that there is a lot of difference working in India and Norway as, he takes leave from office and stays at home to take care of his kids as his wife is also working whereas in India he would have never done this since India is a male dominant society.

In another interview in India - Span Infotech-. Anil told that he had worked in India, US and Norway. The working cultures are totally different in all the three countries. The way Indians think is different, but in some ways, US is a little closer to the Indian way of working than Norway is. US also have a hierarchy in their working culture whereas in Norway there is no hierarchy. Everybody is treated the same, no matter what post he/she has in the company. Decisions are made faster in US while in Norway decision making is slow.

- Maurice, Sorge and Warner’s (1980) theory on differences in institutions for education. This theory focus on how different types of institutions of higher education will lead to different types of competency. In one of my discussion with Capegemini personnel in Norway, it was observed the same by me. They said that perspective of quality is different for different people in different countries.. It depends on how you grow up and what kind of study environment you had in school.

The summary of the report is that national culture, properties of the institutions for higher education, and the organisation of labour are possible causes to the cooperation problems.

5.3 Discussion of QFD Model

The model has been described chapter four of the report. Although, it has not gained popularity but in my opinion, it can increase customer satisfaction and quality of outsourced products. I recommend this model to be used by companies for customer satisfaction and better quality of products.

The basic concept of QFD is to translate the customer’s needs into product design or engineering characteristics, and subsequently into parts. QFD is a step by step process which is easy to understand and deploy. Customer’s needs when translated into simple language are called ‘House of Quality’ chart. This chart contains information of what to do, how to do plus integration of information. QFD Optimizer not only helps a design team build a House of Quality chart, but also supports them to analyse and optimize the information in the house, and thereby determine the target engineering characteristic values that result in an improved, feasible designs. Thus, QFD Optimizer enables a design team to overcome some of the QFD limitations. QFD limitations were reported in experiments done by some practitioners and MBA students from Krannert School of Management, Purdue University [HKCK98].

Moreover, QFD Optimizer is easy to use, and helpful in providing a design team with a systematic way to consider all the functional relationships that constrain the design parameters and tradeoffs between multiple customers attributes simultaneously. Teams who have experimented using QFD models stated that use of the house of quality and the OPTIMIZATION mode of QFD Optimizer guided teams in gaining improvements for their original design. Another benefit stated by participants of experiment from Krannert School of Management, Purdue University was that, QFD Optimizer helped the teams identify which particular engineering characteristics were more critical (influential) in obtaining improved design [HKCK98].

In one of the interview with Evry and Capegemini personnel (Refer Appendix A.3, A.1), he referred that some times, it has happened that customers do not get satisfied with the quality. So, they need to redo the whole process. In, my opinion, if QFD model would be used to quote customer's requirements then quality can surely be increased. Also, the quality of product can be easily monitored using it. I support the use of QFD model in order to increase the quality of product and customer satisfaction.

Chapter 6

Conclusion

This chapter contains the conclusion of the research done in the semester for the thesis “ Outsourcing Software Quality” . It begins by the results I got from interviews and literature research. Then it is followed by answering the research questions from the second chapter.

6.1 Results from Interviews and research

1. International Communication

In business, it is commonly agreed that communication is one of the primary concerns. Thus, for professionals who work internationally; people who interact daily with other people from different countries within their company or with other companies abroad; Hofstede’s model gives insights into other cultures. In fact, cross-cultural communication requires being aware of cultural differences since what may be considered perfectly acceptable and natural in one country, can be confusing or even offensive in another. All levels in communication are affected by cultural dimensions: verbals (words and language itself), non verbals (body language, gestures) and etiquette and do’s and don’ts (clothing, gift-giving, dining, customs and protocol). This is also valid for written communication as explained in William Wardrobe’s essay "Beyond Hofstede: Cultural applications for communication with Latin American Businesses".

2. International Negotiation

In international negotiations, communication style, expectation, issue ranking and goals will change according to the negotiators’ countries of origin. If applied properly, the understanding of cultural dimensions should lead to increased success in negotiations and reduce frustration and conflicts. For example, in a negotiation between Chinese and Canadian, Canadian negotiators may want to reach an agreement and sign a contract, whereas Chinese negotiators may

want to spend more time for non-business activities, small talks and hospitality with preferences for protocol and form in order to first establish a relationship. "When negotiating in Western countries, the objective is to work toward a target of mutual understanding and agreement and 'shake-hands' when that agreement is reached – a cultural signal of the end of negotiations and the start of 'working together'. In Middle Eastern countries much negotiation takes place leading into the 'agreement', signified by shaking hands. However, the deal is not complete in the Middle Eastern culture. In fact, it is a cultural sign that 'serious' negotiations are just beginning."

3. International Management

These considerations are also true in international management and cross-cultural leadership. Decisions taken have to be based on the country's customs and values. When working in international companies, managers may provide training to their employees in order to make them sensitive to cultural differences, develop nuanced business practices, with protocols across countries. Hofstede's dimensions offer guidelines for defining culturally acceptable approaches to corporate organizations.

As a part of the public domain, Geert Hofstede's work is used by numerous consultancies worldwide. But only 3 of them are regarded as partners and have Hofstede's full support with regular contacts.

- The American firm ITAP International Inc. and its ITAP International Alliance propose full-service consulting based on Hofstede's approach using the Culture in the Workplace Questionnaire.
- Similarly, Itim international, headquartered in Finland offers culture and management consultancy, training and coaching.
- Itim focus, in the Netherlands and Finland, concentrate on change consultancy at organizational level.
- International Marketing

As in communication, negotiation and management, the five dimensions model is useful in international marketing too because it defines national values not only in business context but in general. As companies try to adapt their products and services to local habits and preferences they have to understand the specificity of their market.

For example, if you want to market cars in a country where the uncertainty avoidance is high, you should emphasize their safety, whereas in other countries you may base your advertisement on the social image they give. Cell phone marketing is another interesting example of the

application of Hofstede's model for cultural differences: if you want to advertise cell phones in China, you may show a collective experience whereas in the United States you may show how an individual uses it to save time and money. The variety of application of Hofstede's abstract theory is so wide that it has even been translated in the field of web designing in which you have to adapt to national preferences according to cultures' values.

6.2 Answers of Research Questions

Now, in the end the research questions are answered based on the results got from interviews, discussions and literature.

1. Which barriers do software companies face?

For offshore outsourcing the biggest barrier is the cultural difference. Secondly, they face communication problem. Everybody communicates in English but due to different accents it is challenging for them to understand each other, especially in telephonic meetings. On the other hand, in case of nearshoring the percentage of problem is small as compared to offshore outsourcing. E.g. a Chief Consultant of Evry said in his interview that it is easier for them to understand Swedish people's language than Indians. The Vice president of Capegemini said it is easy for him to understand Ukrainians English than Indians.

2. Do the identified barriers vary from the continent to continent?

Yes, it varies from continent to continent. Europe, North America, Australia all have communication gaps with Indian consultants but the ratio of communication gap is larger for European countries. North America and Australia find less difficulty in communicating with Indians. The reason for this variation is that, there are lot more Indians working onsite in US and Australia than in Europe.

To solve the problem, frequent visit of offsite developers to onsite should be planned or vice-versa. Face to Face meetings can always decrease communication gap as you can see the gestures of the other person easily.

3. Do the barriers vary with the size of the organization?

Yes, size of the organization always matters. According to the interviews which I had, I found that smaller organizations have less problems than bigger organizations. As lesser people work there, they talk with each other more frequently and have meetings, thus have better understanding among themselves.

So, the bigger organization needs to have mediators who decreases the gaps. The personal meetings should be preferred in the starting of project. But if not possible in start, personal meeting should be scheduled later to decrease the communication gap and ofcourse, to increase the quality of product.

4. Do the barriers vary over time?

The barriers decrease with time as management by the both sides solves the problems. Thus, whenever a problem arises ,the managements tries to solve it and gradually it deceres. The success depends on how effective the management is, in handling difficult situations.

5. Which problems do we encounter when using agile method in outsourcing?

It depends on how the loosely defined the requirements are. If requirements change too often, budget can increase a lot. Too much involvement of the customer sometimes delays the time of delivery. From the interviews and discussions with the company official's ,it was concluded that companies doesn't prefer agile method in outsourcing, because in that case, there is too much involvement of customer. However, if companies uses agile method as per customer choice then, the documentation needs to be clear relating to time delivery, payments etc.

6. Is it better to have nearshore centre with offshore centre?

Yes, it is always better to have nearshore centre if comapny can cut cost cost as well as get the good quality product. For instance Norway can have Ukraine and US can have Mexico. In one of my discussion with TCS personnel who works onsite in US, he referred that they have one nearshore centre in Mexico where time difference is nominal and labour cost is cheaper as compared to US. Besides, that they have one offshore centre in India who is 12 hours ahead of them.In that way, they work when it is night in US, thus providing 24 hour service plus more productivity in one day. He also referred moving hardware to nearshore also reduces the cost of the space utilized in their own country along with the benefit of backup in case of natural disaster.

7. Can the QFD model assist in increasing the quality and satisfy customers?

Yes, it can surely increase the quality of product resulting in customer satisfaction. The customer's needs would be prioritized and then accordingly the work would be prioritized. QFD model is divided into small models. So, the needs of the customers will be segregated accordingly. In this case the developer can easily take care of all requirements, which results in a better product.

IT services and back-office tasks for companies in high-wage countries are an attractive business area for emerging economies. Offshoring creates well-paid jobs

and export revenues there as well as promoting technology and knowledge transfers. It is no wonder that so many countries are attempting to imitate India's success by promoting themselves as an offshoring or nearshoring location. CEE is a promising location because of its geographical and cultural ties.

From the research it was concluded that nearshoring has certain benefits over offshoring. The table 6.1 shows the advantages over offshore.

Table 6.1: Overall importance rating of offshore outsourcing benefits[CA]

Nearshore Advantages claimed over offshore	% of total
Proximity Advantages	60%
Real time overlaps	42%
Cultural historical similarities	41%
Political economics similarities	36%
Other locational advantages	9%

In the end, it would be nice to discuss an important question:

6.2.1 Why do organizations outsource their business process?

The key factors which have led to a growing trend of outsourcing are:

- Lack of expert-labor in some portions of the business process.
- Availability of cheaper labor, whilst not comprising on the quality of output.
- Ability and feasibility to concentrate on the other crucial business process.

These factors have specifically contributed to most of the outsourced partners across different locations in the world. Expertise in communication capabilities, technical expertise and favorable financial packages are the most important advantages of outsourcing to India.

6.3 Future Work

This work can form the basis for SPI (Software Process improvement) and Outsourcing to find methods that can be used to improve the outsourcing process.

A better model can be developed to increase customer satisfaction based on the QFD model which was referred in Outsourcing chapter.

References

- [add] Advantagesanddisadvantages.
- [Amb] Scott W. Ambler. Communication on agile software projects. Online, Web Accessed on 10.11.2012.
- [AVS⁺09] J.J. Ahonen, A. Valtanen, P. Savolainen, T. Schalkowski, and M. Kontio. Outsourcing through combining software departments of several companies. *Software Engineering Approaches for Offshore and Outsourced Development*, pages 1–14, 2009.
- [CA] E. Carmel and P. Abbott. Distance matters.
- [CA06] E. Carmel and P. Abbott. Configurations of Global Software Development: Offshore Versus Nearshore. In *Proceedings of the 2006 international workshop on Global software development for the practitioner*, pages 3–7. ACM, 2006.
- [CA07] E. Carmel and P. Abbott. Why'nearshore'means that distance matters. *Communications of the ACM*, 50(10):40–46, 2007.
- [Dja05] G.R. Djavanshir. Surveying the risks and benefits of it outsourcing. *IT Professional*, 7(6):32 – 37, nov.-dec. 2005.
- [GK10] A. Gopal and B.R. Koka. The role of contracts on quality and returns to quality in offshore software development outsourcing. *Decision Sciences*, 41(3):491–516, 2010.
- [GNR99] P.N. Gooderham, O. Nordhaug, and K. Ringdal. Institutional and rational determinants of organizational practices: human resource management in european firms. *Administrative Science Quarterly*, 44(3):507–531, 1999.
- [Hau93] John R Hauser. How puritan-bennett used the house of quality. *Sloan Management Review*, 34(3):61–70, 1993.
- [HKCK98] Chang Hee Han, Jae Kyeong Kim, Sang Hyun Choi, and Soung Hie Kim. Determination of information system development priority using quality function development. *Computers & industrial engineering*, 35(1):241–244, 1998.
- [hof] Hofstedemodel. "http://www.ifets.info/journals/5_3/frank.html". Online.

- [Hof80] G. Hofstede. Culture and organizations. *International Studies of Management & Organization*, 10(4):15–41, 1980.
- [hoq] House of Quality. "www.isye.gatech.edu/~spyros/.../Production-rel-Decision-Making.ppt". Online.
- [KNA11] S.U. Khan, M. Niazi, and R. Ahmad. Barriers in the selection of offshore software development outsourcing vendors: An exploratory study using a systematic literature review. *Information and Software Technology*, 53(7):693–706, 2011.
- [MB04] S. Moore and L. Barnett. Offshore outsourcing and agile development. *Forrester Research, Inc*, 2004.
- [Mey06] T. Meyer. Offshoring to new shores: Nearshoring to central and eastern europe. 2006.
- [MSW80] M. Maurice, A. Sorge, and M. Warner. Societal differences in organizing manufacturing units: A comparison of france, west germany, and great britain. *Organization Studies*, 1(1):59–86, 1980.
- [PL06] Maria Paasivaara and Casper Lassenius. Could global software development benefit from agile methods? In *Global Software Engineering, 2006. ICGSE '06. International Conference on*, pages 109–113, oct. 2006.
- [SA90] Viv J Shackleton and Abbas H Ali. Work-related values of managers a test of the hofstede model. *Journal of Cross-Cultural Psychology*, 21(1):109–118, 1990.
- [SO13] CIO(US) Stephanie Overby, 2013. 7 lessons on offshoring in newspaper, Published 26.04.2013.
- [XWW08] W. Xiong, X.T. Wang, and Z.X. Wu. Study of a customer satisfaction-oriented model for outsourcing software quality management using quality function deployment (qfd). In *Wireless Communications, Networking and Mobile Computing, 2008. WiCOM'08. 4th International Conference on*, pages 1–5. IEEE, 2008.
- [ZP12] Xiaosong Zheng and Petri Pulli. Improving mobile services design: a qfd approach. *Computing and Informatics*, 26(4):369–381, 2012.

Appendix

Appendix



Interview Questions selected before interviewing Evry (Company in Oslo)

1. What do you outsource?
2. Do you compromise for quality and time allocated due to outsourcing?
3. Do you provide guidelines when people developing software?
4. Do you measure technical capabilities or is it trust?
5. Are the software completely outsourced?
6. What policy do you have if product is not up to quality?
7. How frequently do you have meeting?
8. How much do you think cultural differences matter?
9. What are the biggest challenges do you face?
10. Why do you outsource?
11. What are the testing methodologies do you use and where the testing is performed?

The following is the description of interviews held in IT companies with the concerned persons in the company:

A.1 Interview with Evry

The interview was held on 15th October with Chief Consultant (Project and Business Support, Financial Services)

1. What kind of softwares do you outsource? It depends on the requirements of the department. I deal with financial services. Basically we get the support to run our business. The other large part is
2. Do you work partly here and partly work is outsourced? It depends on the customer that what kinds of requirements are there. Sometimes it is completely outsourced and sometimes it is partly outsourced.
3. Do you think quality remains intact when you collect requirements here and work is done in India? We have different experiences that are from superb to waste of time. It does not depend on people of India or people of Norway. But according to me it is not the fault that we outsource. It is communication gap that degrades quality. It can happen in same country also. Sometimes we even had better results from outsourced work than from our own place. This is basically the tact of communicating our knowledge to the other party.
4. According to you, how can this situation can be improved when occurs?
 - It depends on how we transform our knowledge to the other party.
 - We should focus on communication.
 - Travelling should be motivated.
 - Instead of just having audio call, video conferencing should be done as face to face communication is more effective.
 - Try to understand and respect each other's culture.
 - Avoid misunderstandings
 - Avoid long emails instead talk on phone or talk on video call
5. How often do you have meetings? It depends on project. In some we have daily meetings and in some weekly and monthly. Daily meetings we have online using skype but sometimes we travel to get the more detailed status of the projects. We have scrum methods for daily meetings. Sometimes we have to talk without video because of low network lines. To have daily meetings is more inspiring to work together.
6. Do you find difficulty in explaining your requirements because of language back? Not really! As now most of the Indians speak good English. So we can talk in English. It is sometimes other way round that we don't find English

speaking people here in Norway. They find uncomfortable to speak but it is not same with everybody as I myself enjoys speaking in English.

7. Do you test technical capabilities of the persons or is it trust that matters? Well I don't have any particular answer as it depends on the project. Sometimes we give projects on trust but sometimes we test the technical capabilities of the persons.
8. How do you establish and maintain good relation? It basically depends on the management how they inspire people to work together. And secondly to use the skills of the persons correctly.
9. How do you handle chaotic situations? They are difficult to handle if the problem is informal rather than formal problem.
10. Do you prefer nearshoring over offshoring? No it depends where we are getting the good skills. But sometimes we do feel it is easy to work with Sweden than in India. Also we want to grow international so offshoring is important.
11. Do you face cultural differences? We do have cultural differences but above all we have IT culture which is kind of same everywhere so I do believe IT culture is more important.
12. Do you time delays because of offshoring Not yet
13. Biggest challenges
 - Handling data and need to have good networks.
 - Encourage people to travel
14. Testing methodologies you use and where it is performed?
 - Unit Testing is normally done offshore.
 - Due to security reasons some data is masked if testing is performed offshore.
 - Acceptance testing is done by customer.
15. Why outsource:
 - To grow international
 - Access to competence
 - Cheap work

A.2 Interview with Managing Director of GENX INFOTECH (Company in NewZealand whose development office is in India)

1. What do you outsource? We outsource all web applications, website design, web development and all kinds of offline softwares.
2. Why do you outsource? I have my development office in India and the cost of labor and development is very much less as compared to other countries. As a result, we can offer better services at affordable prices to our customers.
3. What are biggest challenges you face dealing different people? I haven't faced any big challenge as I have permanent staff in my development office. I don't hire staff on project basis. Also most of my customers are from New Zealand and Australia where I live so I think I act as a bridge between both the parties.
4. How do you monitor the quality of the software? We use social and web2.0 technologies like team viewer and team mate software to monitor the working. Team mate is our dedicated software which has been developed and operated in our company
5. Where the testing is performed? Testing is performed at three ends, Firstly at development office the project manager tests it before delivering it to me and then I test it on my own to make sure that the customer needs and requirements are being fulfilled and at last I use third party testing tools so that the quality certificates can be obtained.
6. Do you suffer because of cultural differences? As mentioned I have my permanent staff and I do not hire people on project basis and secondly I have to deal with limited people, the top level management which includes project managers and office managers. I do not communicate with developers and designers as it is the task of project manager. I am the bridge to fill all the gaps.
7. How frequently do u have meeting? We conduct online meetings daily.
8. What do you do if software is not up to quality? If software is not having good quality, it is send back to developer end with the required things. The developer's team then redevelops and redesigns the software according to customer needs and requirements.
9. Do you compromise with quality due to outsourcing? No never, we do not afford to compromise with quality as that is the only thing which we have to offer to our esteemed customers

A.3 Interview with the Vice President of Capegemini

Capegemini is IT company with 120000 people working in 40 different countries, out of which 40000 are working in India . They have ambition of competing in the champion's league. To be in that league they need to offer attractive services. They need to go global and have customers all over the world. For them India is used to get access to competence and getting cheaper services. They believe that the quality of education in India in IT is higher than many other places in the world. According to him they cannot get equally cheap people with those technical skills in other parts of world. The labor cost of one person in India is one tenth of the cost of person working in Norway, but there are additional costs of travel which includes their travel to India and Indian employees travel to Norway. But if the Indian employee stays in Norway for more than 6 months then it costs them equal. Because the living expanse in Norway is quite high. Also then company has to pay them according to Norwegian law as Indian employee also pays the tax to Norwegian government So they try to make it possible to make them work offshore.

There are certain methods and methodologies that are the same throughout the world such as Rational Unifies Process (RUP), Use cases etc. This makes it easier to work together.

1. What do you outsource?
 - Application Outsourcing
 - Business Process Outsourcing
 - Infrastructure Outsourcing
 - Global Service Desk
2. Why do you outsource?
 - Access to Competence
 - Cheap Labor
 - Want to go Global
 - Don't have enough local workers
 - Cannot deliver products to clients on time without them
 - Capacity to work
3. Do you face cultural differences? Yes, it is not easy to understand each other's culture. Norway has a very informal culture where as, many other places we work with have a formal culture. Eg. The Norwegian employees of Capegemini are very open and give challenges to the vice president (person who

was interviewed) where as Indian employees don't give challenges and are not open with the management. In Norway, if the employee does not understand anything, he will ask again but in India even if they don't understand, the answer is by default "yes". Then, after a couple of days the query comes again. In Norway the project manager is always more important than line manager where as in India the line manager is more important. He considers this difference the biggest challenge.

4. Does the above situation leads to compromising with quality sometimes? No, customer satisfaction is necessary for us, so we make sure before delivery. Some years back we dealt with a situation where there was a mismatch of quality between Indian and Norwegian employees . The Indian employees did something which according to them was of good quality but when they sent the product to Norway, they believed it to be of lesser quality. The customer was also not happy so they had to redo the whole work. This quality mismatch can be possibly due to not explaining the requirements properly or maybe Indian employees didn't understand the requirements.
5. Does distance matter these days? Well, now it doesn't matter much. When we send work to India, the next morning, a lot of work is done in India. But it does matter when it comes to cultural differences. On the other hand going to India is not expensive.
6. Which method do you use to communicate your requirements to outsourcing partner?
 - Sometimes Personal Meeting
 - Video Conference
7. How often do you have meetings?

It depends on the project. Sometimes it is daily short meetings.
8. What level of details do you have for requirements?

First of all, the contract with the customer is made. Then we have requirements from the client. It depends on what kind of project we get: development project or maintenance project. Then we use certain methodologies to document the requirements.
9. Have you developed methods that ensures that requirements do not fall by the wayside?

We make sure that requirements are sent properly by having daily meetings and discussions.

10. How should one proceed in order to ensure that testing performed by external supplier is of desired quality?

Acceptance testing is always performed on shore.

11. Do you need to compromise with time?

Not exactly! We mobilize more people; ten Indians are put on work on the cost of one. So we don't have to compromise in terms of time. But if the requirement changes at a very late stage then maybe we need to extend the deadline.

12. What are testing methods you use? Where it is performed and who are the testers?

Normally, we use the V model for testing . Both offshore and onshore testing is done. Acceptance testing is usually done onshore. Testers can be developers, onshore management and it can be customers.

13. How is security maintained in outsourcing?

EU doesn't allow certain things to be outsourced. If customers want something to do in certain budgets that refers financial budget, then people from India are invited here for working. While testing we anonymize or mask the data if the data is sensitive.

14. What do you think about offshoring vs nearshoring?

Nearshoring is easier than offshoring. Languages are pretty, much alike. Cultures are also almost the same, so it is easy to cope with them.

15. How do you assess the quality of the software?

Quality is what is signed in the contract. We check if we are up to the contract requirements. Then client's feedback is checked. Sometimes quality is assessed by delivering the product in limited time with certain possible expectations, in the initial stage which is then improved afterwards.

16. Do you use agile methods? Only if requirements are loosely defined, otherwise a traditional method is used.

A.4 Interview with Assistant System Engineer (TCS, USA)

1. What do you outsource?

Development and testing

2. Why do you outsource?

– Cost reduction

- Overcoming the travel challenges
 - Business continuity in case of disaster at onshore
3. What are biggest challenges you face dealing with different people?
Communication, time lags, connectivity issues etc
 4. How do you monitor the quality of the software?
The final and integration testing is performed onshore and involves business users to ensure that the business requirements are met. Also there are several checklists that are followed and test cases designed so that work done at offshore is up to standards.
 5. Where the testing is performed?
Both at offshore and onshore. Initial testing is done offshore where it is developed but more advanced testing like integration and User acceptance is performed onshore
 6. Do you have problems because of cultural differences?
No, cultural differences do not affect, much as it is always fun sharing different cultures.
 7. How frequently do you have meeting?
Daily.
 8. What do you do if software is not up to quality?
Testing and reviews are performed at regular intervals to make sure that a quality product is delivered but in case there is an issue, it is discussed with the client to see if we could fix the issue within the delivery timelines. If not , move the deadlines to a later date.
 9. Do you compromise with quality due to outsourcing?
No compromise is done.

A.5 Interview with A1 technology (India)

1. What kind of software you outsource?
We don't outsource to any 3rd party organizations. All work done by our company is managed by employees of the company. The company's offices in US send the requirements to its offshore development centers once a project is finalized with our clients and all design, development and testing occurs in the offshore development center.

Also if our client wants development to be done onsite appropriate resources are sent onsite or hired from US as per project need.

Some key highlights of type of projects being outsourced to our overseas development centers include

- Website Design and Development
- Database Development and Maintenance
- Software Application and Development
- Server Maintenance
- Window Media Streaming Services
- Multimedia and Graphic Development
- Internet Marketing
- Mobile Development(iphone/Android/Blackberry/Windows ME)

2. What are the reasons that your organization decided to outsource?

A-1 Technology has the required staff, equipment's, software and offices from where we execute and develop client's projects. Our staff is highly qualified and have executed numerous projects to date for small to mid-sized and Fortune companies. We use all licensed software's for doing our work and can manage the project as per client requirements. One of our strengths is the ability to provide the required resources (creative, technical, etc.) as projects evolve. A-1 Technology has established resources to address the needs of the industry's business growth. With the current market in high demand for creative skills and the low retention level of creative personnel in smaller companies, our commitment and company strength has provided the environment needed to maintain and grow the talented personnel for the market.

Also we use our offshore development centers to cut cost and outsource work to our offshore development centers. We get skilled expertise in lower cost. We get our work before time as India is ahead of US by many hours. So time zone difference is helping in getting work before time.

3. Do you compromise on quality with outsourcing?

No. We have a highly skilled team of software developers in our development centers. All are post graduates in computer science or similar. A team of quality analyst tests the software before the delivery so that any errors can be rectified and resolved.

All our resources are available on phone, IM, Email during office hours. All resources deployed on a project are dedicated to that project.

We have a separate Customer Care team which provided first level Support for any issues reported by client. The CC team then diverts the issue to the appropriate department for further action and opens a Trouble Ticket. Once the issue is resolved, the ticket gets closed.

We provide maintenance and support services for our clients and our client are provided with a dedicated operations support team. We can provide support staff for our client on 24x7 basis based on client requirements. We also provide all type of emergency supports on 24x7 basis and 365 days yearly.

4. Do you have a certain policy if the product is not finished on time?

Yes, if the product is not finished on time then we have several SOPs. We either increase the manpower on the particular project or we ask the current team to work extra hours on the project for which the team members are given compensation in terms on money or compensatory leaves.

5. Do you provide guidelines to developers for software development?

Yes we provide guidelines & all required training to developers of all level. We have wiki references and online Code libraries which are updated by the technology heads. All software developers follow the coding standards mentioned in the wiki references of the company.

6. What do you do if the software is not up to the quality?

It is seldom that the software is up to the quality because we always have a team of quality analyst testing the software at each and every step of the SDLC. Even if the quality tester missed something, the software is also tested by senior team before delivery.

7. How do you make an assessment, through trust or through measurement of technical skills?

We always assess our software developers by measuring technical skills. After delivery of each project the performance of the team is updated. Feedback is taken by project manager and Project directors. On Successful delivery of project, the whole team is rewarded and on negative feedback, identified resources are provided trainings to enhance their skills.

8. How frequently do you have meetings and what is the medium for the meetings?

There are different calendars for different leaves of the resources. E.g. Software developers conduct Scrum meeting every day and discuss about the work done

yesterday and work plan for today. Likewise project directors conduct weekly meetings to get the update i.e status of the software. A weekly meeting also conducted with clients to show them a working demo of the software. We mostly use WebEx or team viewer for demo of the software.

9. Do you face cultural deference's problems? How do you establish trust?

We never faced any cultural differences problems. The reason behind this is that we have manpower from almost all parts of the world. We have people from different cultures already and they help in understanding the culture of each other.

As far as the point of establishing the trust, we have already worked for 50 of the Fortune 500 clients and as soon as the new client takes a look on our profile they get interested in knowing more about us. We have a good reputation in the market for Mobile & software development and we provide client references which our potential clients verifies beforehand to gain further inputs on us.

10. What are the biggest challenges you face in Offshoring, nearshoring and Outsourcing?

The most important challenge in offshore outsourcing is communication. In order to have a successful project, it was of utmost importance that transparency be maintained in terms of status and clarifications of assumptions and issues. Module-specific bi-daily conference calls should be scheduled with the client. Agendas for these calls must be circulated well in advance so that all issues can be discussed. Brainstorming sessions must be held with the client to arrive at the most time-efficient solutions to encountered issues.

We have worked on several projects using a combination of onshore, nearshore, and offshore teams. In the increasingly technology-driven business environs, organizations that consider information technology as a potentially crucial necessity to its business operations and objectives consider three main criteria while evaluating the competence of an ideal technology service provider

- Ability to understand the business requirements of the client
- Ability to reliably execute the project within stipulated timeframe
- Ability to execute the project and deliver with the best value for money

Following figure A.1 shows the economic growth of company.

The geographic distribution of Centers of Excellence, synchronized module development process, and continuous integration methodology are all part of

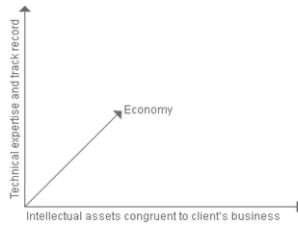


Figure A.1: Economic Growth.

these innovative initiatives of A-1 Technology that have created to improve value for money.

11. Which methodologies you use for testing? Where is testing performed and who are the testers?

A-1 Technology uses several tools & process to review developer code. There is a separate QA Department who monitors and reviews developer's codes. The development team receives the requirements from the Customer. The team analyzes the requirements and specifications in detail and prepares the System Design and consequently starts module wise development.

Testing is performed at a dedicated Testing Lab in our development center by experienced QA Resources.

The QA analyst works on the Quality Plan and Test cases taking the reference from the specification document. Upon development, the Testing is performed on the given set of developed modules (Client's needs).

If it gets approved by the QA Analyst/Manager, then it's sent to the client for Acceptance.

If there are issues/bugs in the application, the QA Analyst logs the errors in the Bug tracking software (Mantis). The Development Team, upon fixing these issues as reported in Mantis, handover the build for testing.

While performing the Testing process, if any Bugs/Defects are encountered while testing the application, they will be reported in the Bug Tracking tool. In the bug tracking tool, the QA Analyst will provide the relevant details of the bug/issue in the following manner:

- Bug Id

- Severity
- Priority
- Bug Summary
- Bug Description- Steps to reproduce, actual result,expected result
- Bug Snapshot
- Assigned to

In this case the complete Bug Cycle will be followed. Every bug reported in the Bug-Tracker should be resolved and closed within 1-2 days of being reported (depending upon the urgency).

The bug classification is based on the following:

- A User Representative/PM/QA sets the bugs priorities. A bug's priority level consists of Urgent, High, Normal and Low. These will be set as per the criticality of the module being tested.
- A bug's severity level pertains to a specific component, i.e., a bug classified as a blocker indicates that the component is unusable, whereas critical denotes the component is usable for specific modes or short periods of time. The QA person may assign a level, but this may be modified by the user representative.
- Bugs classified as enhancements may be gathered together as part of a scheduled task for ongoing development. In such cases, the bugs will be closed and the resolution set to later. This process may be initiated by the assignee by pointing out the need for a new target in his or her weekly report.
- Once completed and approved, the build is delivered to the client.

Following figure A.2 shows the process of bug classification.

In our Organization, Staging Site is different from the development site. Development is usually done on our Servers and after that we deploy it on the Server end for testing. Our Staging site provides a QA zone that is separate from the development or production environments

Normally before deploying an updated version of software to the production environment, we test the production under staging environment.

Application related to Mobile projects are tested in actual device simulators / emulators (e.g. Apple OS or Android) and devices and also particular cellular carrier or network (e.g. AT&T or Verizon) as per project requirements. Testers also conduct checks for different display orientations (portrait,

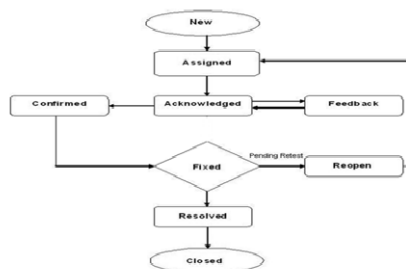


Figure A.2: Bug Classification Growth.

or landscape) for the same app in different devices (e.g. iOS, Droid) since the handling and display of information is not always consistent on each devices.

Detailed test plans are submitted to client early in development to ensure that they are in accordance with client organizational standards.

Testing tools used are:

- Open STA for Load and Stress Testing
- QTP for Functional and Regression Testing
- Test Complete for Automated Testing
- Neo Load : We use for Load/Stress Performance testing, backend testing
- Burp Suit we use for Security testing
- Bug Tracker – For tracking project bugs

Our testing artifacts include:

- Test Plan
- Traceability matrix
- Defect Reports
- Test Cases

12. How is security maintained in outsourcing?

A-1 Technology Security Policy Statement: "It shall be the responsibility of the Network/Admin Department to provide adequate protection and confidentiality of all corporate data and proprietary software systems, whether held centrally, on local storage media, or remotely, to ensure the continued availability of data and programs to all authorized members of staff, and to ensure the integrity of all data and configuration controls."

For security we use our personal tool for client communication called Basecamp. It is a platform where we can post status reports, comments, feedback, Source codes etc. Only the team members associated with the project is provided the log in for Basecamp so that there is no chance of unwanted persons to get access to the information. Webcams are installed in the development labs to monitor the employees. Firewalls are installed on systems to ensure that resources do not open unwanted sites. No external memory devices are allowed in the development labs. We send the code to client on basecamp only.

Summary of Main Security Policies

- Confidentiality of all data is to be maintained through discretionary and mandatory access controls.
- Internet and other external service access is restricted to authorized personnel only.
- Access to data on all laptop computers is to be secured through encryption or other means, to provide confidentiality of data in the event of loss or theft of equipment.
- Only authorized and licensed software may be installed, and installation may only be performed by Network Department staff.
- The use of unauthorized software is prohibited. In the event of unauthorized software being discovered it will be removed from the workstation immediately.
- Data may only be transferred for the purposes determined in the Organization's data-protection policy.
- All diskette drives and removable media from external sources must be virus checked before they are used within the Organization.
- Passwords must consist of a mixture of at least 8 alphanumeric characters, and must be changed on specific time intervals as mandated by network security team and must be unique.
- Workstation configurations may only be changed by I.T. Department staff.
- The physical security of computer equipment will conform to recognized loss prevention guidelines.
- To prevent the loss of availability of I.T. resources measures must be taken to backup data, applications and the configurations of all workstations.
- A business continuity plan will be developed and tested on a regular basis.

13. What do you think about nearshoring and outsourcing?

We provide the best Offshore Software Development, i.e. software Development outsourcing and Offshore outsourcing services to startup and Fortune 500 companies globally. We have a dedicated team for our services. You can also outsource your in-house project to us. Our offshore developers work in USA morning shift timing from their offshore locations and coordinates with clients and our onsite resources in USA in an effective manner. Our clients have often cited the daily status reporting and strong project management as one of the key differentiator over our competitors. The Daily Status Reports shall allow you to continuously gauge the progress on the project, and any feedback required can be given without costly delays. The teams shall be closely monitored by the Team Lead and further by the Project Director, thus ensuring that there are no communication gaps.

A-1 Technology offers a dedicated development model to our clients in which a software development team that is dedicated to a single client uses technology, tools, processes and methodologies unique to that client. Each offshore dedicated development Center is located at an A-1 Technology facility in India and is staffed and managed by the Company. Once the project priorities are established by the client, A-1 Technology, in conjunction with the client's IT department, manages the execution of the project. By focusing on a single client over an extended time frame, the dedicated development Center team gains a deeper understanding of the client's business and technology and can begin to function as a virtual extension of the client's software team.

A-1 Technology's dedicated development center brings a unique solution to technical resource requirements of organizations. Professionals in a dedicated development Center are focused on a particular technology platform and business domain pertaining to a given Client. The knowledge assets acquired by the center remain with it even while individuals move on to other activities. Clients assign projects to the center, which assumes full responsibility of the assignment and delivers end-to-end solutions.

A dedicated offshore development center develops and maintains skills and domain knowledge on client's environment, standards, norms and products. The center retains both explicit and tacit knowledge about the requirements of the customer in addition to being in the forefront of the technology area. This combination of business knowledge and technical skills allows the development Center to deliver high quality solutions that bring performance advantage to the customer. Professionals in a dedicated development Center are focused on a particular technology platform and business domain pertaining to a given

Client. The knowledge assets acquired by the center remain with it even while individuals move on to other activities. Clients assign projects to the center, which assumes full responsibility of the assignment and delivers end-to-end solutions.

14. What is your personal experience in outsourcing?

For the more than 2000+ projects that we have outsourced from our US offices to our development centers in India, our experience of working and delivering high class bug free projects to our clients is unparalleled till date.

A.6 Interview with Accenture(India)

1. What kind of software do you outsource?

Billing in Telecommunication

2. What are the reasons that your organization decided to outsource?

Outsourcing is very basic requirement in the market, enhanced with quick analysis and calculations. Also, organization sees profits in this.

3. Do you compromise on quality with outsourcing?

Not at all. In fact, Quality is the priority while outsourcing. This will make market for you.

4. Do you have certain policies if the product is not finished on time?

This is very rare scenario but still it happens. Yes. Some actions need to be taken if product is not finished on time so that customer relations and organization reputation don't get destroyed. Actions can be customer will be informed before hand. Manpower can be increased in order to deliver as soon as possible.

5. Do you provide guidelines to developers for software development?

Developers need to be guided initially. Once they are in flow, they need not to be guided at every step.

6. What do you do if software is not up to the quality?

We follow right at First Time. Still there are some misfortunes. For that, we make sure that software is upto the mark in the next release.

7. How do you make an assessment, through trust or through measurement of technical skills?

Assessments are made, based on the performance and knowledge only. Knowledge is measured by conducting technical and analytical tests.

8. How frequently do you have meetings and what is the medium for the meetings?

Status meetings happen once in week, face to face with managers and team (provided your team and manager are on the same location as yours) otherwise, meetings are taken up through telephone.

9. Do you face cultural difference's problems? How do you trust them?

Yes there are cultural differences, but the way it is handled, depends on individual. Either you learn or make others learn from you. And trust is one factor in team, without which team performance would be degraded. One has to establish the trust via his/her performance and helping others.

10. What are the biggest challenges you face in outsourcing, offshoring and nearshoring?

Responsibility in delivering Right at First Time.

11. Which methodologies you use for testing? Where is testing performed and who are the testers?

Tools are available for testing. Testing is performed offshore. Testers are the project members who have complete knowledge of the project to do the testing.

12. How is security maintained in outsourcing?

Making security policies, confidential data files with passwords, not sharing the data outside of the organization.

13. What do you think about nearshoring and outsourcing?

It gives opportunities to merchandise the products as well as resources.

14. What is your personal experience in outsourcing?

Outsourcing brings exposure to work, that too with different culture people. Gives the bigger market to develop the products.

A.7 Interview Guide

Initially the interview guide contained very general questions which are:

1. What kind of software you outsource?
2. What are the reasons that your organization decided to outsource?
3. Do you compromise on quality with outsourcing?
4. Do you have certain polices if the product is not finished on time?

5. Do you provide guidelines to developers for software development?
6. What do you do if software is not up to the quality?
7. How do you make an assessment, through trust or through measurement of technical skills?
8. How frequently do you have meetings and what is the medium for the meetings?
9. Do you face cultural differences problems? How do you establish trust?
10. What are the biggest challenges you face in outsourcing, offshoring and nearshoring?
11. Which methodologies you use for testing? Where is testing performed and who are the testers?
12. How is security maintained in outsourcing?
13. What do you think about nearshoring and outsourcing?
14. What is your personal experience in outsourcing?