EFFECTIVE OFFSHORE OUTSOURCING OF IT SUPPORT AND MAINTENANCE PROJECTS: A STUDY ON SRI LANKAN EMPLOYEES

Dileepa Sandaruwan Karunarathna

199115L

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Department of Computer Science and Engineering

University of Moratuwa

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DECLARATION

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ABSTRACT

IT support and maintenance (ITSM) projects may fail due to issues in the offshore outsourcing process. These failures critically affect both offshore and onshore organizations in the long term and short term. The majority of the IT support and maintenance works are performed in live/ production environments, and even a minor failure may result in massive financial losses. Despite its importance, research in this area to find the reasons for ITSM project failures and methods to mitigate them has been limited.

This study intends to find out the methods for effective offshore outsourcing of ITSM projects in Sri Lanka. The mixed-method (both quantitative and qualitative) is used as the core of the research. A few pre-survey interviews were conducted with managerial-level ITSM professionals in IT organizations as part of the qualitative approach. A self-driven online questionnaire was distributed among ITSM professionals in Sri Lanka to gather data that fulfilled the quantitative approach of the study.

In the context of Sri Lanka, this study is unique. It can be used to identify reasons for the ITSM project failure along with the methods to mitigate those failures, which will help to achieve successful project outcomes. This study found six factors that contribute to failures and issues in ITSM projects. Based on the statistical analysis, the six factors were further categorized into two as the most influencing factors and the least influencing factors. Unsatisfactory cost reduction, leadership issues, and communication issues are identified as the most influencing factors, while knowledge transfer issues, lack of technological competencies, and information security breaches are identified as the least influencing factors. Effective outsourcing methods are recommended based on each key factor to mitigate ITSM project failures in Sri Lanka.

Keywords: IT support and maintenance project failures, offshore outsourcing, unsatisfactory cost reduction, leadership issues, communication issues.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

CAB	Change Advisory Board
CIS	Communication Issues
ICT	Information Communication Technologies
ISB	Information Security Breaches
ITSM	Information Technology Support and Maintenance
KTI	Knowledge Transfer Issues
LEI	Leadership Issues
LTS	Lack of Technological Skills
PBI	Product Backlog Item
PFL	Project Failures
UCR	Unsatisfactory Cost Reduction

1. INTRODUCTION

1.1 Background

Outsourcing is a key area in the modern Information technology industry where it plays a major role in both software development and postproduction phases in the software life cycle. Although outsourcing methods have existed since the beginning of the IT industry, it has become a favorable approach with the drastic increase of information technology usage in the globe within the last couple of decades. It has been identified that IT outsourcing is generating considerable income for both developing and developed countries in the world and generating a large number of opportunities for IT professionals with high demanding salaries. As a high-level picture, outsourcing includes the functions below,

- Replacing the works which were performed in-house earlier with outsiders with expert knowledge and skills.
- Transferring or delegating routine tasks and activities to outside firms.
- Establish a rewarding method by considering the overall performance or individual performance of employees of the company (Rao, Nilekani, & Mousavi, 2014)

Nowadays, many companies are trying to outsource their non-core tasks to external parties and pay more attention to their business domain. When it comes to Information Technology, this approach has become more effective compared to other supporting tasks which are connected to the main business domain because the evolving technological trend is one of the main challenges which non-technical organizations are facing while competing in the modern world.

Sri Lanka can be considered as a popular destination that provides outsourced technology services to large scale organizations in the world; for example, Sri Lanka has been highlighted and recognized in world rankings such as “Offshore destination of the year”

by the National outsourcing association of the UK in 2013 and 2015 (National IT-BPM workforce survey, 2019)

There are three main types of outsourcing methodologies identified,

- Onshoring. Relocating work or services to a lower-cost location in the company's own country.
- Offshoring. Relocating work or services to third-party providers overseas.
- Nearshoring. Relocating work or services to people nearby, often bordering regions and countries (Lutkevich, outsourcing, 2020).

Out of all the above outsourcing methods, offshore outsourcing can be considered the most popular approach with cost contemplations (Team, 2020). When considering ITSM projects, finding resources has become a key factor where the majority of support and maintenance tasks must be up and running 24/7 with highly skilled technical persons. Therefore, finding resources is highly costly in onshore, especially in Europe and the US regions. By considering these kinds of reasons, many companies are running their ITSM tasks from offshore companies. But the majority of these ITSM projects are running below the expected level of outcomes or have ended up with failures due to various reasons.

ITSM Project failure can be identified as full or partial project discontinuation. This includes,

- Discontinuation of the entire project and handover to another offshore organization.
- Discontinuation of the entire project and handover back to the mother (onshore) organization.
- Partially hand over the project to another offshore organization or back to the mother organization.

1.2 Motivation

ITSM project failures through offshore outsourcing may cause issues, which will lead to massive losses of the resource and valuable time.

It has been identified that 25% of all outsourcing relationships fail within two years, and 50% fail within five (Jafari, 2020). When considering the existing studies done on this area, it seems that there is no sufficient attentiveness paid by organizations to identify the critical failure factors and the methods to mitigate them.

Therefore, identifying the critical factors of ITSM project failures and methods to mitigate the identified factors are crucial. This helps to reduce the ITSM project failures in advance without causing any significant issues.

Finally, the study will be helpful for other researchers who may be focusing on the failures of offshore outsourcing projects.

1.3 Research Scope

This research project plans to fill the existing research gaps by identifying the critical factors of ITSM project failures. Based on the identified factors, this research further plans to introduce methods for effective offshore outsourcing to overcome such shortcomings.

This study is limited to the Sri Lankan context, which includes the local ITSM professionals, ITSM organizations, and their support and maintenance tasks. The mixed-method (Quantitative and Qualitative) is used as the core of the study. First, for the qualitative research approach, sets of pre-survey interviews are conducted with managers of offshore ITSM projects. Second, depending on the factors identified from the pre-survey interviews and the existing literature, an online questionnaire is developed to survey the views of the Sri Lankan ITSM professionals. A framework is introduced based on the identified factors that represent the severity of failures. Finally, a set of effective methods are also introduced to mitigate the ITSM project failures.

1.4 Problem Statement

Organizations look to outsource their support and maintenance tasks to obtain a competitive advantage while reducing costs. However, while literature has extensively analyzed the reasons for the failures of outsourced software development projects and measures to overcome them, little work exists on outsourcing ITSM projects that is specially done based on Sri Lankan employee context. It is also challenging to adapt existing literature and best practices directly because of the work-level differentiation between the domains. For example, software development happens early in the project, while ITSM happens in the latter part of the project. Also, the technical competencies of ITSM workers and the composition of the ITSM project teams have differences compared to the software development teams. Therefore, it is important to understand the factors that lead to failures of ITSM projects and the methods to overcome them.

Therefore, as a summary, problem statement can be identified as,

"What are the factors that lead to the failures of ITSM offshore outsourcing projects according to Sri Lankan employee experience and how to overcome them? "

1.5 Research Objectives

The objectives of this research are to,

- Identify the critical factors behind the failures of ITSM offshore outsourcing projects according to employee experience.
- Explore the severity of the identified factors and identify the most influencing failure factors of the ITSM offshore outsourcing projects.
- Introduce methods to mitigate the failures of ITSM offshore outsourcing projects.

1.6 Research Output

The main outputs of the research are,

- The key failure factors behind the ITSM offshore outsourcing projects.

- A framework that represents the severity of the identified key failure factors of ITSM offshore outsourcing projects.
- The methods to mitigate the failures of ITSM offshore outsourcing projects, which can be used by the ITSM organizations for quality project transitions and smooth operations.

1.7 Research Outcomes

The success rate of an IT project, after offshore outsourcing, is critically affecting ITSM organizations. Therefore, eliminating the failures by identifying them beforehand is the solution. To fulfill that main concern, this research will suggest failure mitigation methods by identifying the key failure factors. Organizations can use these methods as a known knowledge base while planning their ITSM offshore outsourcing projects to mitigate failures.

1.8 Thesis Outline

In the following chapters, this thesis describes the Literature review, Research methodology, Data analysis, Recommendations/ Conclusions, and References of the study.

2. LITERATURE REVIEW

2.1 Introduction

Sometimes, the offshore outsourcing process may cause ITSM project failures where lots of employees may lose their jobs, and companies may fail to fulfill their customer requirements as expected. In most cases, organizations were in a better position before the transition. But, after offshore outsourcing, they may lose their valuable customer base due to production support with poor quality.

Since there may be several factors for project failures, those key factors needed to be considered while performing offshore project outsourcing where most of the organizations do not have a clear understanding of those failure factors and methods to mitigate them.

There are fewer amounts of literature that describe the entire picture about ITSM project failures and there is a considerable amount of research that focuses only on single failure reasons. Other than those, most of the existing research is based on software development outsourcing and this research aims to extend those findings to the ITSM area. Related current literature can be categorized into below key sections.

- **Issues with Knowledge Transfer Process**

Domain knowledge is a critical factor in the ITSM field. To manage the critical production issues, there must be a clear understanding of the design, end to end knowledge of the product/ domain. But due to various reasons, most organizations do not pay much attention to the importance of this process and try to reach the production live phase within a shorter period. The majority of those types of transitions begin with issues and may end up with an entire project failure.

- **Lack of Technological Competencies**

In the modern world, there are different kinds of technologies available to develop software products. To develop large-scale products or platforms there may be a large

number of technologies used by software developers during different stages of the development. To support those products, resources that are involved in the outsourcing process should be highly skilled with all the required technological competencies. But finding those types of resources is a difficult task. The lack of these highly skilled resources is a reason behind ITSM project failures.

- **Leadership Issues**

When considering an offshore outsourcing project, Leadership skills play a major role, as well as in other different domains. In most of the scenario's teams with a limited number of resources are responsible for the outsourcing process. Due to different kinds of scenarios, the teams may have to face issues (Ex: - Within training activities in offshore premises, sudden changes in knowledge transfer plans, issues due to cultural differences, etc.) and leadership should have the skills to defend all the obstacles and lead his team and reach the expected project goals. But lacking the resources who have that kind of leadership skills may initiate project failures.

- **Unsatisfactory Cost Reduction**

One of the main reasons behind the failures of ITSM offshore project outsourcing is the unsatisfactory cost reduction. To cover the cost gaps, management of the organizations may need additional earnings which may lead to further cost cuttings. Most of the time these cost-cutting processes will be the reason for employee demotivation as well as lesser quality outputs compared to the past. Lack of quality will lead to dissatisfaction with the customer. Customer dissatisfaction is the beginning of project failures. Therefore, targeted cost and profit margins should be clearly defined to mitigate project failures.

- **Information Security Breaches**

Most organizations are paying more attention to their information security and when it comes to offshore outsourcing, managing security breaches become more difficult. In the ITSM field, that becomes more critical because of the closeness to production data and information. When working with offshore organizations, identifying the legal background of the two countries, and the expected level of information security is important. But the

majority of offshore transitions are unable to handle security breaches, up to the expected level and those become initiations for project failures.

Other than the above key areas of existing research fields, there are limited numbers of research on the below areas of offshore outsourcing ITSM project failures.

- Politics within the Organization.
- Retention of Key Professionals.
- Communication Issues.

2.2 Project Failures Due to Outsourcing

IT maintenance works of major organizations are continuing to outsource to countries like India for cost advantages of labor and other infrastructure facilities. Yet, many IT-maintenances offshore outsourcing organizations are unable to fulfill customer expectations (Krancher & Dibbern, 2014). Before initiating the project, the organization's project manager/ managers must determine the mode and extent of maintenance activities to be carried out in the outsourcing process. The strategy of outsourcing is different based on the project category (Ex: - code maintenance, level 2 support, level 3 support, helpdesk, etc.). Once the software is developed, maintenance activities should be initiated by answering the below key questions (Miller, 2018).

- What party will perform the maintenance activities?
- Do the required maintenance strategies are installed in the lifecycle of the project?
- Have we addressed the methods to handle technological changes in the maintenance phase?

According to a study done by Technavio (IT Outsourcing Market by Service, End-user, and Geography - Forecast and Analysis 2020-2024) IT outsourcing industry will increase by $98 billion within the year 2020 to 2024. Although there are positive predictions, past

figures indicate that the outsourcing process consists of major failures. According to Dun and Bradstreet's Barometer of Global Outsourcing, "20 to 25% of all outsourcing relationships fail within two years, and 50% fail within five years" (Jafari, 2020).

In most of the scenarios, onshore organizations are expecting benefits right after the offshore project transition. But the majority of the outsourcing organizations are unable to fulfill that requirement even after one year. There are various reasons behind that, like lack of business involvement by offshore teams, lack of knowledge level of handling incidents, etc. But this could be identified by onshore management as the poor quality of the offshore support team (Aydin & Bakker, 2008). Therefore, these types of known behaviors need to be addressed very carefully. Otherwise, projects may fail within a shorter period.

Outsourcing is strenuous to implement, and the outsourcing relationships ended up with high failure rates. Counting on who you ask, it may be anyplace between 40% to 70%. At the center of the problem is the inherent conflict of interest in any outsourcing arrangements. The consumer seeks higher service, usually at lower costs, than it might get doing the work itself. The vendor, however, desires to create profit margins. That tension should be managed closely to confirm a palmy outcome for both client and the vendor (Overby, 2017).

Issues related to ITSM projects can be categorized under different categories such as human resources, the structure of the organizations, technologies used in companies, management of the organization, etc. Few examples for the above-identified categories can be pointed as following. The management category contains issues related to training and appraisal. Database management, data dictionary kinds of issues are examples of the category of technology-related problems (Mohapatra, 2013).

In general, the risk increases as the lines of responsibility between the onshore client and the offshore service provider become less clear, and the extent of the obligation increases. No matter what the method of outsourcing is, the connection will only be successful if the client and the vendor bring the awaited advantages (Overby, What is outsourcing?

Definitions, best practices, challenges and advice, 2017). Therefore, ITSM project failures due to offshore outsourcing need to be addressed with high importance.

2.3 Project Failures and Poor Knowledge Transfer Process

Knowledge transferring is a key area in offshore support and maintenance project transition. It was found that knowledge transfer is more crucial than planning the entire transition and retained the organization for transition performance (Beulen, Tiwari, & Heck, 2011). Time and resource utilization for this process differ concerning the complexity of the project. Organizations should manage this area with high importance. If there are any loopholes in the process, they may impact the production phase with failures.

In the majority of cases lacking the knowledge transfer (KT) to vendor staff is a reason for offshore project outsourcing failures. Reasons for unsuccessful KT may connect with the cost managing process by reducing relevant investment for coordination, specification, and control over the entire knowledge transfer process. A failure at transition is a risk for IT outsourcing. Transferring knowledge in offshore IT outsourcing relationships is even harder (Beulen, Tiwari, & Heck, 2011).

Although there are several existing works for the knowledge management process in offshore project outsourcing, the level or the portion of the resource investment is not mentioned with regard to the project scope and project specification. In the available literature, there are different views on the knowledge management process. In some states, the knowledge management process was divided into four areas as knowledge creation, knowledge storage, knowledge transfer, and knowledge application (Krancher & Slaughter, 2013). When considering outsourcing, knowledge transfer is one of the key processes.

In the current era, managers in most of the organization consider the knowledge transfer process as a strategic approach. But for outsiders, strategic outsourcing is a method of

helping their clients to reach their targets innovatively with a competitive advantage. One of the research, that based on 160 Indian suppliers and their US clients; found that the key feature in outsourcing processes is knowledge transferring. Both parties understood that the key point is understanding the client's technical and business domain. But most of the time there are conflicts between what each side understands by "domain experts". When considering the supplier, understanding the client's industry is the domain expertise and domain expertise for the client is to understand the relevant products, process, technology, and business (Lacity & Rottman, 2009).

There are several dimensions used in the literature to measure the knowledge transfer process. This study has considered mostly used dimensions among them to measure the knowledge transfer issues in offshore outsourcing ITSM projects.

Cognitive Load

Existing literature thoroughly expresses that ineffective knowledge transfer to vendor staff is a common source of failure, especially since immense amounts of client-specific knowledge need to be transferred. As in the literature once there was an experiment to measure the effectiveness of the knowledge transfer. Initially high cognitive loads of tasks were provided to learners and they were overstained by the complexity. Secondly, lower cognitive tasks were provided and there were limited learning opportunities in that process. Finally, moderate cognitive loads of tasks were provided, and learning was at an optimal level. This is known as the cognitive load theory (Krancher & Dibbern, 2014). Most of the ITSM project groups contain employees with similar interests due to the same level of academic background, learning purposes, competencies, etc. But according to cognitive theory, heterogeneous groups have more learning ability than homogeneous groups (Hsiao, Kester, Brouns, & Sloep, 2013). That means, there is a negative impact while transferring knowledge as a team in ITSM projects. Therefore, managing the correct cognitive load at an optimum level and selecting the correct KT group is crucial in the knowledge transfer process, otherwise, there may be knowledge gaps due to low cognitive

loads or demotivation among support engineers due to high cognitive loads, which will eventually lead to project failures.

Supportiveness of The Trainer

The trainer is a key role in the knowledge transfer process, and he must provide his knowledge to the recipient by heart. There may be conflict situations where third-party factors interfere with the intention of the trainer.

In some cases, the trainer may feel he could lose his job after a successful knowledge transfer where the recipient will continue with the work which the trainer has performed earlier.

Sometimes there could be cultural differences between internal employees and external employees. Because of these differences, the person who conducts the knowledge transferring process may not be able to provide his 100% productive effort to the knowledge transfer process. As per existing literature, human resources who conduct KT processes have been considered as a key factor and the below actions are suggested in the literature (Lacity & Rottman, 2009).

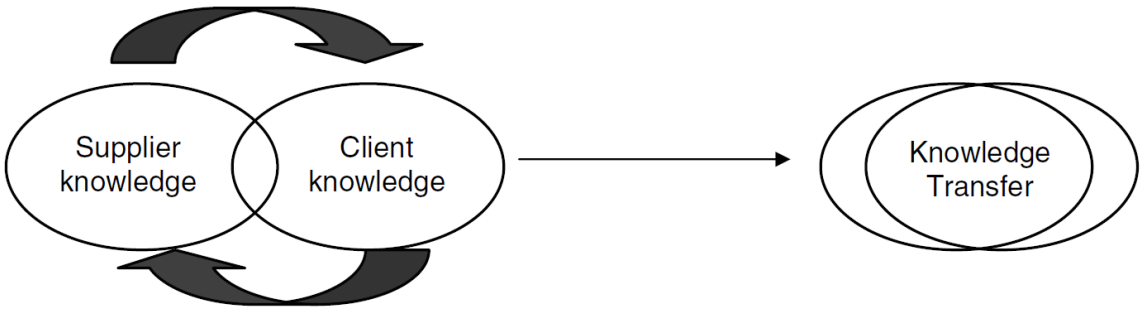


Figure 2. 1: What is the Knowledge Gap and How and Who will Fill it? (Lacity & Rottman, 2009)

As per figure 2.1, Organizations can follow the below approach to mitigate the project failures while offshore outsourcing.

- Motivate in-house employees who have the expertise to share their domain knowledge and experience with employees in an outsourcing company.
- Consider external employees as their internal employees and provide training without any limitations.
- Provide an opportunity for external employees to work with internal employees within the training period.
- Provide a shadowing period to both parties' vice versa.

The knowledge transfer process can be broken down into two main ways as structured and unstructured. Where structured knowledge transfer consists of encoded and embraided knowledge. This structured knowledge can be further divided into 4 steps as initiation, implementation, ramp-up, and integration. Out of these main areas, the first two are directly connected with the trainer who conducts the KT process. Finding the best trainer with required competencies, methods use by the trainers for knowledge transfer (best practices, training access techniques, etc.) are included in the initiation and implementation steps (Chen & Robert, 2010).

Familiarity of the Knowledge Transfer Process

Previous experience is important in the KT process. The capacity of absorbing knowledge can be improved with similar kinds of previous experiences (Chen & Robert, 2010). A correct understanding of the knowledge transfer process is crucial for the success of an ITSM project. As per existing literature, this has been addressed in the form of two questions. The first question is how to plan the knowledge transfer to vendor staff effectively. This procedure contains face-to-face presentation sessions, replay sessions, creating reading documents, phone conference, job-shadowing and it has been mentioned that the quality outcomes of these are directly connected with previous experience and familiarity of support engineers. The second issue is identified as knowledge transfer governance, which is focused on the organization and management perspective. Therefore, organizations need to provide guidance to support engineers beforehand of the

initiation of the knowledge transfer process and that has been identified as a key factor in the entire KT process (Krancher & Dibbern, 2014).

2.4 Project Failures Due to Lack of Technological Competencies

Different tools and technologies are required for different support and maintenance activities and required skill sets are also different from a project to another project. For example, conducting training programs on the software for business users when they are newly joined to the organization does not require a deeper level of the architecture or the code level knowledge. But when consider solving complex issues like business report issues, application showstoppers in a production system, etc. requires a high level of technical knowledge. These can be classified as code level, log level, module level, and program-level competencies (Stojanov, 2011).

When considering the entire knowledge base required for an Engineer in ITSM Field, it can be divided into three main categories as Computer Science Knowledge, Business Knowledge, General Knowledge, and those can be further described as below with the required percentage for each competency.

- Computer Science Knowledge (74%)

  This consists of all the technical competencies like Programming language skills, development environment skills, application implementation/ release skills, diagramming Skills, etc.

- Business Knowledge (12%)

  This knowledge is basically in line with the Organization's business domain and contains Application functionalities, routine processes of the organization, knowledge of the known issues, etc.

- General Knowledge (13%)

> All other knowledge required to "support and maintenance" work is related to this. Some of these can be identified as knowledge of the foreign language; Ability to read user manuals (Anquetil, Oliveira, Dias, Marcelo, & Meneses, 2003)

With regards to the above research, Computer Science knowledge can be identified as a key factor and technological competencies have a high weightage of the entire project knowledge base. Therefore, lacking that piece may cause issues in ITSM projects.

A few unique measures are utilized to survey technological competencies in the current literature. The most relevant areas can be identified as below.

Individual Technical Skills

As in the software development field, individual technical skills are crucial in the ITSM field as well. Existing literature, which is focused on IT project failure reasons, clearly indicates that missing adequate experience with the tools and techniques of individuals is a key reason behind IT project failures (Verner, Sampson, & Cerpa, 2008).

Finding individuals with the required skills is a difficult task to perform. Most of the time skills of the hired employees are not matched with the project expectation. There are many reasons behind that. Unmatching budgetary concerns with highly skilled workers against the estimated budget for the projects is an example of that. But when decisions are made by employees with minor technological competencies, the quality of their outputs is lower than the industry expectation level (May, 1998). Therefore, these issues need to be addressed with high importance.

Certifications for technical competencies are a way of identifying the resources with the required knowledge. Unlike in the past, in the current world technical employees are trying to certify as much as they can, to prove their eligibility to the role. One of the main reasons for these kinds of approaches is the failures that occurred due to a lack of proven knowledge in the technical domain. This is common in the IT support field as well. There is little research performed on technological certifications in the process of hiring professionals. According to research by HDI, certification is an important factor for ITSM

professionals where 32% is based on proven skills while selecting a Support engineer (Kelly, 2013). Some of the examples of these types of certifications are Microsoft Certified Engineer, Red Hat Certified Engineer, AWS Certified Associate, etc.

Organizational Understanding and Support

As per existing literature, nowadays many reputed organizations are trying to improve the skills of their employees without considering any other facts. Once a senior management person has mentioned that "I need people with well-rounded skills, who I can develop technically through our training program. Candidates just need to have the aptitude" (Kelly, 2013). That means in the current era, organizations have identified the importance of the process of training their staff to improve their technical skills. That is a massive gain for individual employees as well as organizations themselves to mitigate failures.

In order to improve the technological competencies of employees, organizations can follow continuous evaluation strategies by understanding professional profiles against their competency levels and provide opportunities to develop workforce competencies. This would be helpful for employees to reach their career targets as well as the company to achieve the goals without failures (Colomo-Palacios, Tovar-Caro , García-Crespo, & Gómez-Berbís, 2013). By considering the above past research examples, "technological competencies" can be identified as a key factor when considering the ITSM field, and while offshore outsourcing, this must be considered in a critical manner.

2.5 Project Failures and Leadership Issues

As in every other area, leadership plays a major role in offshore project outsourcing as well. This is much complicated in offshore project outsourcing, due to the complexity and differences of the attending organizations of different countries. The basic responsibility of an ITSM leadership role is to produce change and set directions to cope with change. Which is not similar to planning or long-term planning in a normal leadership role. Several

key features can be identified in a leadership role such as knowledge, skills, personality, self-confidence (Riaz, Tahir, & Noor, 2013)

Below Key features can be found out with regards to the leadership skills, especially for offshore project outsourcing processes.

- Communication

  When it comes to these types of projects, communication is a key feature. Due to geographical distance, a proper mechanism must be established to facilitate communication. daily meetings, weekly team meetings, PBI calls, CAB meetings must be initiated by leadership and manage effectively.

- Handle Cultural Differences

  Organizations in different countries are engaging in this type of transition and cultural difference always exists. Ideal leadership should be able to manage those differences. The leader should be able to identify the differences and manage the resolution throughout his team to eliminate conflicts where employee conflicts may end up with project failures (Barrow, 2018)

- Recognize Management Differences

  The majority of offshore project migrations are established between the US/ Europe and South Asia/ Asia Pacific Regions. These regions have different types of management processes. In US/European countries, the structure of the organization is flatter and usually having a similar level of respect where in the Asian region, Seniority has a higher level of respect. As a leader in offshore outsourcing projects, he should be able to use contrasting management techniques, which in turn should navigate productivity and engagement.

- Decision Making Skills

  In ITSM projects, decision-making is crucial where most of the issues come during the live phase of the project. Therefore, key decisions may impact the project which

could lead to failure or success. In the existing literature, the decision-making skills of leadership have been identified as a key feature. Leaders do not permit random behaviors and do not make decisions before clearly understanding the problems. Vision and execution are the key areas that good managers or leaders are worried about in the entire project (Riaz, Tahir, & Noor, 2013).

- Clarity on Goals

  As a leader, it is crucial to be constantly focused on the entire picture of the business domain with regard to both long terms/ short term, onshore/ offshore, and communicate identified goals in an effective method to help drive engagement and productivity in this area. (Barrow, 2018).

Out of the above-highlighted facts, ***Handle Cultural Differences***, ***Decision Making Skills***, ***Clarity on Goals*** have been used as the measurement factors for Leadership issues in ITSM outsourcing.

2.6 Unsatisfactory Cost Reduction and Project Failures

Transaction cost economics is the main idea behind offshore IT project outsourcing, and it will narrow down large amounts of cost for resources. Therefore, personnel and labor cost advantages come first (Krancher & Dibbern, 2014). Although initial expectations are valued at around 40% of cost reduction within the first few years only 15% - 25% is achievable (Davison, 2004). That means there is a high risk of overestimating the cost-saving, underestimating the overhead costs that are necessary to get to the cost-saving stage, and discounting non-cost factors that influence offshore outsourcing outcomes. When it comes to measuring the cost savings, Tangible cost must be managed by the usage of cost accounting models and Intangible cost must be managed by highly accurate management skills and insight. Existing research indicates that 50% of offshore IT projects fail due to unsatisfactory cost reduction than originally expected figures and further it explains that offshore outsourcing projects resulting in more failures than lowering cost reduction (Philip, Schwabe, & Menash, 2009).

Some measurements have been applied as part of writings to measure the discernment of expectation of high-cost reduction with regards to ITSM project failures due to offshore outsourcing.

High Cost of Transition

Transition is the initiation of support and maintenance work for offshore teams. But expecting profit in this phase is a difficult task to be achieved. As per existing literature, the normal time duration for transition takes from 3 months to 1 year and can be further extended with a lack of KT coverage. Here both vendor and client parties need to understand that the period of transition is the most expensive stage of outsourcing (onshore training, frequent travel between two countries, accommodation, etc.) and make a clear understanding of the no-profit situation. Otherwise, clients may experience nasty surprises which could be an initiation for the entire project failure. According to an example shown in literature, there was complete project discontinuation right after nine months from the project initiation and the high cost of transition is the main reason behind that (Overby, 2003).

Hidden Cost

In practice, it is typically assumed that further value will be attained through outsourcing, even though this has not been calculated in any way. Most outsourcing decisions are made based on predicted cost savings. However, various researchers have found the process of assessing the cost effects of an outsourcing decision problematic (Arola & Kärri, 2012). When hidden costs come into play, there will be gaps between expected cost and actual cost and organizations may need to touch extra cost-saving mode. Most of the extra cost savings directly impact the employees and they can feel the pressure. That could reach employee demotivation in a higher manner.

Monitoring profit margins should be regularized in these types of projects. Because most of the time, loss of margin starts at the beginning of a project. If the service offerings are

not well-defined, repetition of the work is difficult to be avoided. These types of repetition of work will overdue cost margins. Most of the time this type of hidden cost is highly coupled with resources. Therefore, planning the most suitable team structure is crucial to avoid unexpected cost flows (Grainger, 2017).

Other than mentioned hidden costs, covering telecommunication links between two regions, inflation, and foreign exchange fluctuations, tensions with neighboring countries (Ex: - terrorism) can be identified as the hidden cost of offshore ITSM projects (Rattray, 2005). Once these hidden costs are combined with the calculated cost at the beginning, there could be massive gaps and could cause customer dissatisfaction.

2.7 Information Security Breaches While Project Outsourcing

As mentioned in earlier topics, these types of outsourcing agreements are occurring between relatively different organizations in different countries. Most of the time Regulations for security measures are different and managing those gaps is a very difficult task to perform. Nearly two-thirds of data breaches are happening due to bad outsourcing and offshore outsourcing has a high weight among those. According to the 2013 Trustwave Global Security Report on 450 global data breach investigations, 63% were linked with an outsourcing process. These investigations were based on the IT system support, development, and maintenance area. In most cases, organizations are chasing after the cost-saving and they forget about the security of their valuable data sources. Lacking procurement is another reason for information security breaches (Ashford, 2013).

In the modern era the biggest fear against offshore outsourcing is the concern about privacy. It can be either personal data with regards to the individual or organization. Once personal data is available to the public, a person who has access to that data will have full control over it. When it comes to offshore outsourcing, storing this critical information is a key area to be managed. Therefore, organizations must conduct a proper survey before migrating critical information sources to offshore organizations. In some organizations, although they have outsourced their IT/ software components, they try to keep their data

sources onshore with their trusted security barriers. But the organization's high concern about cost savings may transfer their data sources to the offshore premises as well. Then those companies are at high risk for data breaches and need to pay more attention to their information sources. But as per current research, Information security has the lowest weightage when considering the offshore outsourcing process. Most experts in this field agree that protecting security data is only as strong as the weakest link. The weakest point in the chain could be anything from a human problem to a data problem, to an encryption problem, to a policy problem, to a customer service problem (Basu & Nikam, 2006). Human security breaches can be either mistakes or intentional. Existing literature clearly explains that ethical issues of employee behavior are the main concern of information security breaches in IT offshore outsourcing (Patel & Conners, 2008). Therefore, managing ethical principles are crucial. As a measurement to avoid information security breaches, ***Ethical Principles*** within organizations are used.

Due to the security loopholes in the offshore outsourcing process, data or intellectual property breaches can result in long-lasting consequences. These will be highly impacted on the customers, service providers, investors, and business relationships. Security breaches can be identified with below three dimensions (Nassimbeni, Sartor, & Dus, 2012).

- Organizational Dimension
- Legal Dimension
- Technical Dimension

Here most of the organizational dimension-related work is related to organizational ***Ethical Principles*** and ***Legal Dimension (background)*** which is concerning the legislative framework under which the company and its partners or suppliers operate used as the second measurement to check information security breaches. Here technical dimensions can be ignored where technical tools in offshore organizations are almost the

same as in onshore organizations and technical-related human competencies are already addressed in section 2.4.

Therefore, organizations need to provide more attention to the information security region in the process of offshore outsourcing with proper dimension analysis to mitigate project failures.

2.8 Communication Issues

In ITSM projects, communication is a key factor. Although it looks like a basic soft skill of an employee, a single irrelevant, unprofessional communication may lead to dissatisfaction with clients. Although technical expertise is the key to the success of a project, most of the failed projects have not failed only due to technological issues. Nowadays there is a limited number of one-to-one discussions but when employees use advanced technological sources such as Skype, the email they need to follow the same communication skills.

In some cases, demanding situations come whilst speaking in a clean manner throughout diverse languages and cultures and can result in miscommunication regularly. We usually realize that miscommunication arises when western managers have not effectively read between the lines of the subtle and indirect use of language in Asian cultures (Barrow, 2018). Therefore, improving communication skills is a key feature in offshore migration projects. Therefore, as a measurement point for communication issues in ITSM projects, ***Clear Communication*** is identified.

In some situations, onshore teams keep away from transferring important information because they do not have enough assurance of the outsourcing organization enough and do not like to take a risk and have their idea stolen. On the other hand, clients do not share some information with outsourcing companies because they believe some things are apparent. But if the outsourcing company does not completely understand what it is supposed to accomplish, then the work will not be completed as expected. To eliminate

these types of issues, proper agreements need to be signed between two parties (Jafari, 2020).

If organizations need to manage cultural differences well, they need to keep a close relationship between offshore and onshore, so everyone is aware of each other's cultural practices. Also, some companies deploy a local person to sit within the onshore office and help with relationships on both sides (International, 2019). When managed in an engaging way, regular communication is the only way to bridge cultures and build relationships (Barrow, 2018). This can be identified as ***Organizational Support*** to the employees and organization itself to reduce communication gaps which are used in this research as the second measurement to check communication issues in ITSM projects.

Employees in this domain have to work in irregular working shifts due to the time zone differences where most of the time employees have to sacrifice their normal routine due to this working pattern. These types of long-term sacrifices will lead to fatigue, bad morale, mistakes, and higher amounts of stress which may end up in bad communication channels between the employees in offshore organizations and the business personals in onshore organizations. Therefore, these kinds of working behavior need to be managed properly because bad communication can seriously impact the success of the service or project (10 common reasons for failure with IT outsourcing partners, 2016). Therefore, as the final measurement of communication issues ***Maintain Professionalism*** is used. When there are issues with controlling temper, it is very difficult to work with others (Barriers and opportunities of offshore strategies, 2015).

2.9 Factors and Dimensions of Offshore IT Support and Maintenance Failures

Table 2.1 shows the summary of factors that have a relationship with ITSM project failures. These factors along with pre-survey interview outcomes have been considered in this research in order to find the methods to mitigate the Offshore outsourcing ITSM project failures

Table 2. 1: Factors affecting IT support and maintenance project failures

Factor	Dimensions
Knowledge Transfer Issues	• Managing Cognitive Load • Supportiveness of the Trainer • Familiarity of the Knowledge Transfer Process
Lack of Technological Competencies	• Individual Technical Skills • Organizational Understanding and Support
Leadership Issues	• Handle Cultural Differences • Decision Making Skills • Clarity of Goals
Information Security Breaches	• Legal Background • Ethical Principles
Unsatisfactory Cost Reduction	• High Cost of Transition • Hidden Cost
Communication Issues	• Clear Communication • Organizational Support • Maintain Professionalism

3 RESEARCH METHODOLOGY

This section covers the overall research methodology used in the study to achieve the desired research objectives. The answer strategies have been decided with the utilization of referred literature in conjunction with the recognized factors, which are affecting the ITSM project failures due to the offshore outsourcing process. This section contains research variables (independent and dependent), calculation of sample size by determining population, preparation of data, and the data collection methods.

3.1 Research Problem

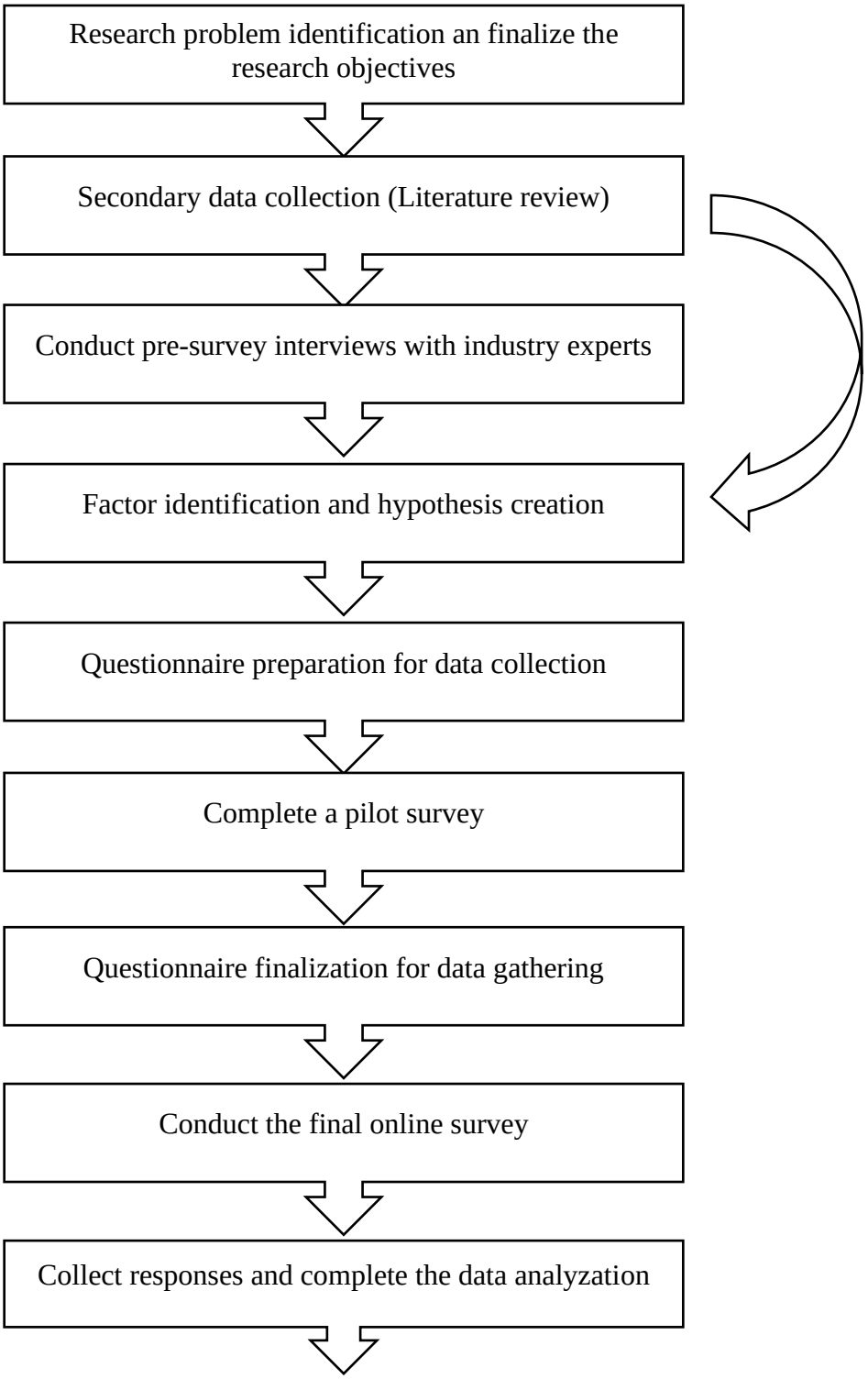
The main purpose of this study is to research the problems below.

- What are the key factors behind ITSM offshore outsourcing project failures according to employee experience?
- What are the most and least influencing factors of ITSM offshore outsourcing project failures?
- What are the methods to mitigate ITSM offshore outsourcing project failures?

3.2 Research Method

The mixed-method has been used in this study which contained both qualitative and quantitative research methodologies. The qualitative method included a set of pre-survey interviews with managers/leads of offshore ITSM projects. Secondly, depending on the factors identified from the existing literature inputs and pre-survey interviews, a questionnaire was developed to survey the views of IT support professionals which comes under quantitative research methodology. Since the populace of this study are professionals in the ITSM industry in Sri Lanka, a hundred percent coverage is not practically possible to receive responses. Therefore, a self-administrative online questionnaire has been designed to collect individual responses from the predefined sample. Based on the identified factors, a framework for the failures of ITSM offshore outsourcing projects is introduced along with methods to mitigate the identified failures.

Figure 3.1 represents the entire research approach which is containing both qualitative and quantitative approaches in the correct order.



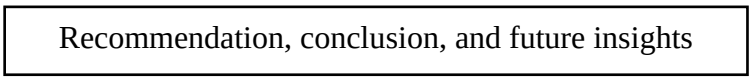


Figure 3. 1: *Research Methodology*

3.3 Pre-survey Interviews and Questionnaire Design

A questionnaire survey is one of the foremost widespread and most ordinarily used quantitative analysis instruments in the research community. Before starting the questionnaire preparation, a set of pre-survey interviews have been conducted with industry experts along with existing literature to come up with a high-standard questionnaire to fulfill the better result expectation. Questionnaires are used to test hypotheses, therefore after the pre-survey interviews (qualitative research methodology) a quantitative research arrangement is carried out since this type of survey scale provides the basic relationship between dynamic observations and the statistical representations of quantitative relationships. There are several advantages of using questionnaires like the ability to collect large amounts of data in relatively lesser time than other methods. The initial questionnaire was tested through a pilot survey and after filling the gaps, that was presented to the sample audience for data gathering.

The method started by distinguishing the analysis of the problem and the connected publications regarding the failure factors in offshore ITSM projects. As determined withinside the literature survey, six factors have been recognized as highly used factors that could affect the ITSM offshore outsourcing project failures. This study is supposed to locate how these recognized factors are truly impacting offshore ITSM projects and find the methods to mitigate the failures in ITSM offshore outsourcing projects.

3.4 Conceptual Framework

Previously known factors within the existing literature, which were further validated by pre-survey interview outputs have been thought as the independent variables during this research and the ITSM offshore outsourcing project failures become the dependent

variable. The relationship between the ITSM offshore outsourcing project failures and the independent variables, knowledge transfer issues, lack of technological competencies, leadership issues, unsatisfactory cost reduction, information security breaches, communication issues are shown in Figure 3.2.

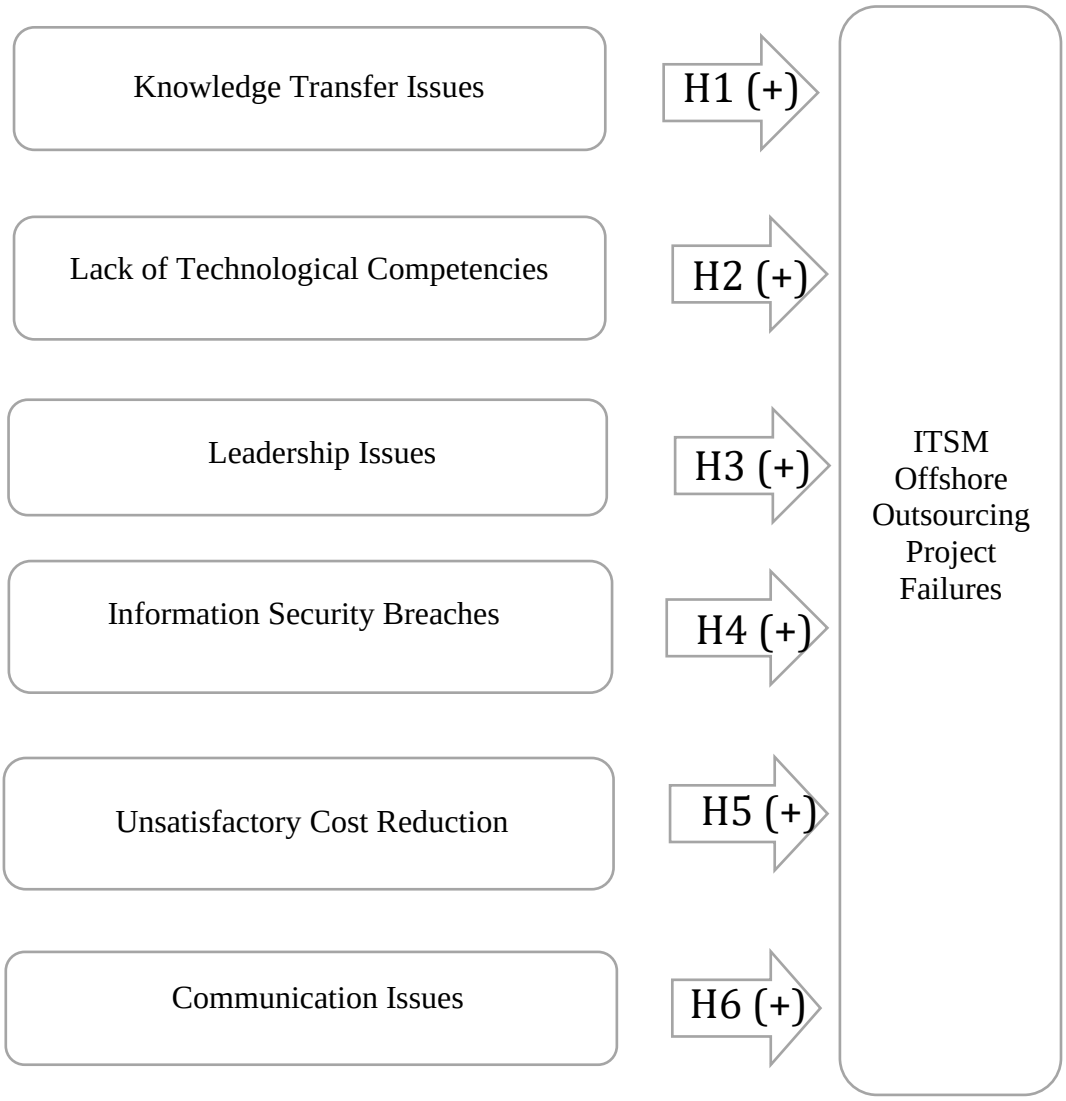


Figure 3. 2: Conceptual Framework

3.5 Hypotheses Development

Six hypotheses have been advanced to check the connection of this conceptualization. It is anticipated that the answer for ITSM offshore outsourcing project failures can be located primarily based on the confirmation acquired from examined hypotheses and null hypotheses, which are denoted by H_0.

H1 – There is a positive relationship between knowledge transfer issues and ITSM offshore outsourcing project failures.

$H1_0$ – There is no relationship between knowledge transfer issues and ITSM offshore outsourcing project failures.

H2 – There is a positive relationship between the lack of technological competencies and ITSM offshore outsourcing project failures.

$H2_0$ – There is no relationship between the lack of technological competencies and ITSM offshore outsourcing project failures.

H3 – There is a positive relationship between leadership issues and ITSM offshore outsourcing project failures.

$H3_0$ – There is no relationship between leadership issues and ITSM offshore outsourcing project failures.

H4 – There is a positive relationship between information security breaches and ITSM offshore outsourcing project failures.

$H4_0$ – There is no relationship between information security breaches and ITSM offshore outsourcing project failures.

H5 – There is a positive relationship between unsatisfactory cost reduction and ITSM offshore outsourcing project failures.

$H5_0$ – There is no relationship between unsatisfactory cost reduction and ITSM offshore outsourcing project failures.

H6 – There is a positive relationship between communication issues ITSM offshore outsourcing project failures.

$H6_0$ – There is no relationship between communication issues and ITSM offshore outsourcing project failures.

3.6 Dependent Variable

ITSM offshore outsourcing project failure is considered as the dependent variable of this study. To measure this factor, three items have been used in the questionnaire. "*I feel IT support and maintenance projects have a better operation quality in offshore than in onshore*", "*I have experienced/ seen instability in IT support and maintenance projects after a poor offshore migration process*" and "*I feel an IT support and maintenance project will fail within five years of the period due to the poor offshore migration process*" are the mentioned items. A five-point Likert scale was used to gather the responses from respondents which start from 1 - strongly disagree up to 5 - strongly agree.

3.7 Independent Variables

This study contains six independent variables as shown in the conceptual framework (*Figure 3.2*). The instruments and dimensions of the following search are considered to measure these factors that affect the failures of ITSM projects.

Knowledge transfer issues have been measured based on the dimensions of cognitive load, familiarity with the knowledge transfer process, and the supportiveness of the trainer. A total of seven items have been included in the questionnaire to measure this factor. For examples, "*I am not satisfied with the knowledge transfer period provided for me before handover the project*", "*I was unable to manage the majority of the support task by only referring to the knowledge transfer conducted during project transition*" have been

included for check cognitive load of the knowledge transfer process and "*I believe the trainer who provided the KT, did not have the sufficient domain knowledge to conduct a successful KT session*", "*I feel the trainer did not provide his maximum effort in the entire KT period*" to check the supportiveness of the trainer.

Six items were used to measure the lack of technological competencies based on two dimensions which are individual technical skills and organizational understanding and support. A few examples items which were used in the questionnaire to measure the lack of technical competencies can be identified as, *"I feel that my organization did not validate my technical skills with the required skills for the project when I was recruiting for the project*", "*I was not satisfied and confident about my technical skills regarding the project activities*", "*I believe the management of my organization did not have a clear view of the technical skills of each employee*", "*I feel that I have not received enough aid from my organization to improve my technological competencies*".

Leadership issues were measured by using four items under the dimensions that handle cultural differences, decision-making, and clarity of goals. The questions like "*I believe leadership in my project did not have the capability to handle the cultural difference between onshore and offshore while filling the gaps*", "*I believe the close collaboration of offshore and onshore is highly depending on the leadership of the project*", "*I feel my leadership did not have a clear picture of the entire project and the offshore outsourcing process*" were added to the questionnaire to collect the responses.

Four items were used to measure information security breaches on two dimensions which are legal background and ethical principles. "*I was not aware of the major security policies of both of my onshore and offshore organization situated regions*", "*I have not carefully studied the legal agreements between myself and organization before entering the offshore support project*", "*I have experienced information security breaches within my project which were occurred by mistake or unethical manner*" are a subset of the items which are used to measure the information security breaches.

Same as information security breaches, unsatisfactory cost reduction is also measured under two dimensions which are high-cost transition and hidden cost. "*I and my team had to spend more time in the project transition phase than estimated at the beginning*" and "*My management push us towards cost reduction (reduce unnecessary calls to onshore etc.) and there were cost cuts directly impacting me (Ex: - cutting of shift allowance, transport allowance)"* are the items come under unsatisfactory cost reduction.

As the final factor, communication issues were measured by using three dimensions which are clear communication, maintain professionalism, organizational support. "*I did not have the ability to clearly communicate with senior stakeholders without confusing them with poor language skills*", "*When I was facing an issue which I was unable to solve, I hesitated to communicate with onshore and seek help due to my communication issues*", "*My management did not take necessary action to reduce communication gaps between onshore and offshore (Ex: - Deploying team members to onshore, etc.)"* used to collect the responses within the questionnaire.

In this questionnaire, the number of questions for each independent and dependent variable varies with the strength of existing literature. But the minimum requirement of four questions for each variable according to (Boone & Boone, 2012) is maintained throughout the questionnaire.

A summary of the variables (independent and dependent) can be found in Table 3.1.

Table 3. 1 Mapping of Questions to Variables

Variable	**Scale**	**Measure**	**Question**
ITSM project failure	Likert	5-point scale	Q7 - Q9
Knowledge Transfer Issues	Likert	5-point scale	Q10 – Q16
Lack of Technological Competencies	Likert	5-point scale	Q17 – Q22
Leadership Issues	Likert	5-point scale	Q23 – Q26
Information Security Breaches	Likert	5-point scale	Q27 – Q30

Unsatisfactory Cost Reduction	Likert	5-point scale	Q31 – Q34
Communication Issues	Likert	5-point scale	Q35 – Q38

3.8 Data Collection

Qualitative and quantitative approaches are used to develop and test the hypothesis to fulfill the objectives of the study, Sampling is often randomized and illustrative to assure that results could be summed up to a population from a well-defined sample in a quantitative research piece. On other hand, sampling is used to understand the main problem in qualitative research, which is more useful for the investigator. Since the employees in the ITSM industry in Sri Lanka have been considered in this study, the sample size is large and that was used to test the hypothesis.

Before starting the primary data collection from a larger audience, a pilot survey was performed with a limited number of IT professionals with the required IT background, and adjustments to the questionnaire were performed based on the outcomes of the pilot survey.

An online questionnaire was developed by using the inputs from existing literature and pre-survey interview outcomes. The main intention of this questionnaire is to collect the primary data for the study. This questionnaire was dispensed to random respondents based on the personal and official contacts who are working in ITSM domains in Sri Lankan organizations. Social media (LinkedIn etc.) was used as the main source of dispensing the questionnaire with current social distance regulations.

3.9 Population and Sample Selection

The target audience of this research is IT support and maintenance professionals in Sri Lanka. According to the survey done by Sri Lanka ICT Agency – 2018, the total number of ICT workforce in 2019 is 146089. Out of that 8.49% are engaging with ITSM related works as shown in Figure 3.3. Therefore considered 8.49% of the Total ICT workforce in Sri Lanka as the population (12402).

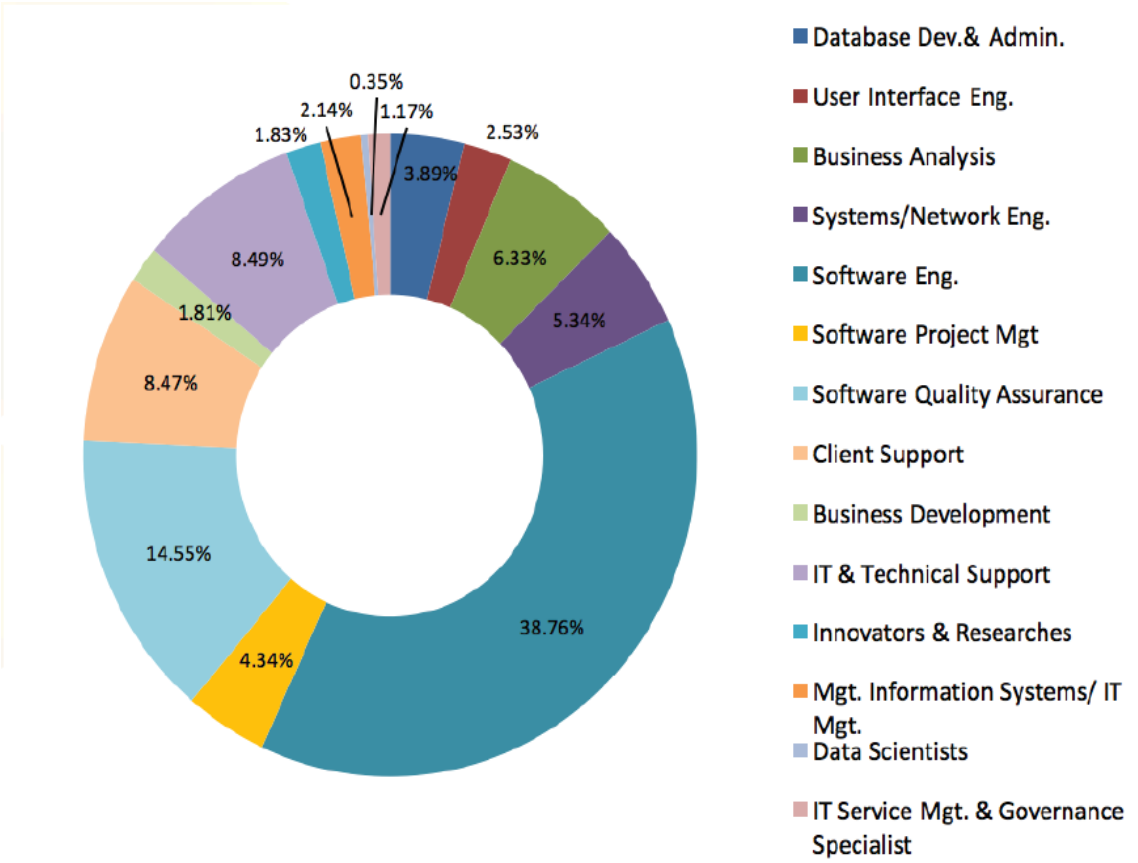


Figure 3. 3: ICT workforce breakdown (National IT-BPM workforce survey, 2019)

Simple random sampling is used to decide the required size of the sample of this study. In this method, there is an identical opportunity of having picked the object from the audience. As stated in the online repository "www.surveymonkey.com ", the calculated sample size for a population of 12,402 is 373 (margin of error = 5, confidence level = 95). The sample size is further validated by the statistical table findings of (Sekaran & Bougie, 2016). There, a minimum sample size of 375 is suggested for a population of 15,000 and a minimum sample size of 370 is suggested for a population of 10,000. Therefore, the minimum sample size requirement for a population of 12,402 was determined as 373.

3.10 Process of Data Collection

As part of the qualitative research approach, four interviews were conducted with industry experts who have more than ten years of working experience in the ITSM domain. These inputs are somewhat related to the existing literature and the questionnaire is developed by using the combination.

There are thirty-eight questions included in the questionnaire for this survey which includes demographic questions to recognize the individuals in the sample. Participants were requested to demonstrate their concession based on a five-point Likert scale. Objectives and hypotheses were used to design the questionnaire and it was used to gauge the factors affecting ITSM project failures which are knowledge transfer issues, lack of technological competencies, leadership issues, unsatisfactory cost reduction, information security breaches, and communication issues.

Factual feedback from respondents regarding the ITSM project failures was gathered through this questionnaire. This survey was distributed to random individuals who are working in ITSM organizations in Sri Lanka and social media was used as the main source of dispensing the survey. Periodic reminders were sent to collect the required samples accurately.

4 DATA ANALYSIS

This section describes the statistical method of reading the information gathered via an online questionnaire. In the beginning, descriptive statistical analysis was performed to summarize features from the gathered collection of information. Secondly, Cronbach's alpha was used to measure the reliability of the research instruments. In the end, simple regression, multiple regression, and analysis of Pearson correlation were used to determine the interconnection between the independent and dependent variables. SPSS and SPSS-AMOS analytical computer packages were used for all the statistical calculations and to generate the required tabular outputs.

4.1 Pre-survey Interview Analysis

As mentioned in the literature review phase, related existing literature for this study is not covering all the areas of ITSM related issues and some existing literature sources may not be relevant to the ITSM projects in the Sri Lankan context. As this study is based on information technology, which is rapidly changing, some of the existing works can be disproven with domain knowledge of the current industry. Therefore, four pre-survey interviews were conducted with industry experts in the ITSM domain to fulfill the mentioned gaps.

Table 4.1 represents the background of the participants who were interviewed. All the interviews were conducted by using online communication methods and platforms like Skype, Microsoft teams, WhatsApp.

Table 4. 1: Summary of Pre-survey Interviewers

	Current Role	Working Experience (Years)
Participant 1	Senior Manager – Application Support	15
Participant 2	Manager – Application Support	12
Participant 3	Tech Lead – Application Support	10

Participant 4	Tech Lead – Application Support	11

According to the industry experts, 6 factors identified from existing literature are relevant to this study. All of them were agreed with unsatisfactory cost reduction, leadership issues, knowledge transfer issues, information security breaches, and communication issues. Two managers agreed with the lack of technological competencies and tech leads did not agree for that point where they believe that there are sufficient technological competencies with ITSM professionals in their projects. They have mentioned that organizational support is the key factor behind filling the loopholes in technological competencies and most of the organizations are following programs to reduce those gaps. But none of them were agreed with employee retention and company politics as factors that are affecting ITSM project failures. Therefore those 2 factors were eliminated from the questionnaire and further analysis.

They have identified that unsatisfactory cost reduction is the main reason behind offshore ITSM project failures. Because the main reason behind offshore outsourcing of ITSM projects is the cost reduction and when that is difficult to achieve, projects may tend to remove from Sri Lanka and move to other cost-saving destinations like India and East Asian countries. Therefore, the management of local organizations must focus on the main reason behind offshore outsourcing and reach other targets with the right balance.

They have explained the role of leadership is much more important in offshore ITSM projects than any other project in the entire software life cycle. The main reason they have provided to prove that is the stage of the project. The majority of ITSM projects are in the production phase and quick and effective leadership decisions are much important. Because a single false decision or late decision may end up in crises.

As per them, previous experience is crucial in the process of forming a new ITSM team. Therefore, finding the correct combination of employees is important. They have seen the

failures of teams with a lack of experience in previous ITSM projects (Ex: - forming an ITSM team with software development professionals).

Finally, they have pointed out the attitude issues in employees. These issues are mainly highlighted in the process of communication. In ITSM projects, clear communication is important to resolve the issues in less time. But due to attitude issues and difficulty in handling foreign professionals, they have seen and experienced failures in offshore projects. These inputs from pre-survey interviews are used in the questionnaire design.

4.2 Data Preparation for Analysis

The online questionnaire consists of thirty-eight questions which are used to gather the data for both independent and dependent variables. These questions are self-explanatory, and the questionnaire was created by using google forms. The questionnaire was distributed among ITSM employees in Sri Lankan organizations and respondents were followed up until collecting the responses.

4.3 Descriptive Analysis

The initial section of the questionnaire consists of six demographic questions to gather the characteristics of respondents. Those questions are categorized as the gender of the respondent (male, female, prefer not to say), age of respondent (below 20, 20-25, 25-30, 30-35 and above 35 years), highest educational level of the respondent (college diploma, bachelor's, master's, doctorate and other), respondent's current designation (intern, junior, senior, lead, manager), respondent's total working experience in IT field (less than 2, 2-5, 5-10, 10-15 and above 15 years), and the approximate number of employees in the company where the respondent is currently working at (less than 10, 10-50, 50-100, 100-500, more than 500).

4.3.1 Gender Distribution

Among the respondents, the majority of 63.8% are males, 36% are females and one respondent did not reveal the gender as denotes by Figure 4.1.

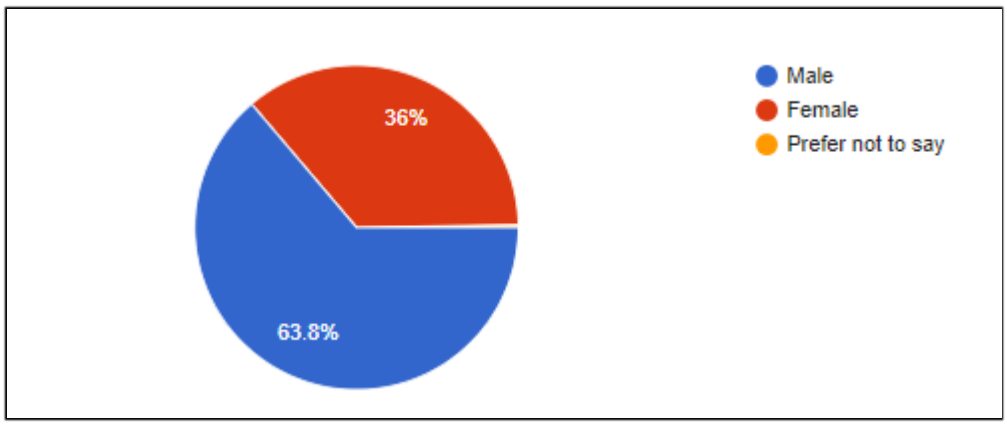


Figure 4. 1: Distribution of Gender

4.3.2 Age Distribution

Figure 4.2 demonstrates the age distribution among the sample taken for this study and as per the figures, the majority of the responders are in the age 25 – 30 category and that represents 53.9% of the total sample. The second highest is in the age 30 – 35 range and that is 24.4% of the total sample. The third-highest percentage represents the age 20 – 25 category and that is 17.7% of the total sample taken.

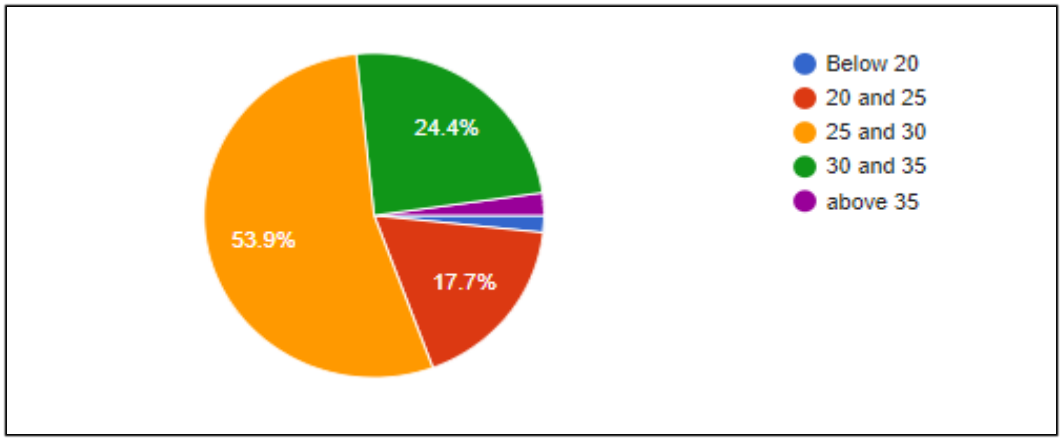


Figure 4. 2: Distribution of Age

4.3.3 Education Level Distribution

According to Figure 4.3 which represents the highest educational qualifications of respondents, 72.5% (258 out of 356) have bachelor's degrees and 22.8% have master's degrees. The third highest category represents the highest education qualification as a college diploma and that contains 16 out of 356 respondents.

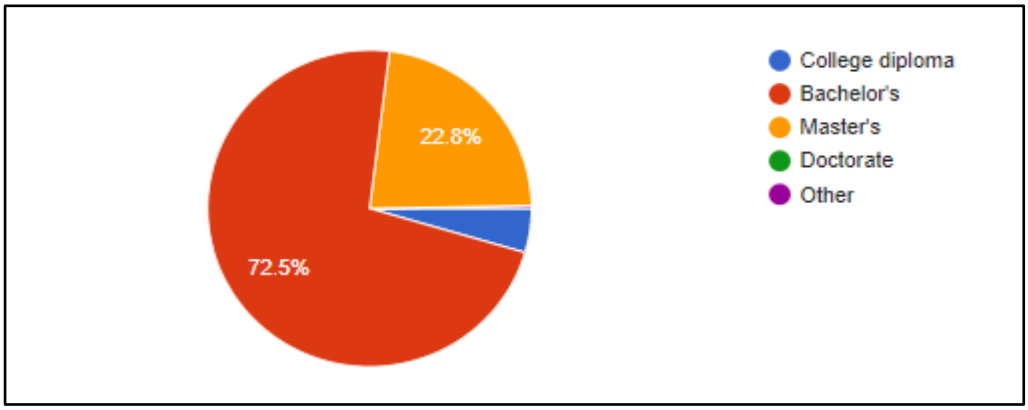


Figure 4. 3: Distribution of Education Level

4.3.4 Designation

Figure 4.4 represents the designation categorization of the respondents in the field of IT support and maintenance. Rather than looking for a specific designation, this categorization showcases the level of designations in the ITSM field. The majority of participants are in the levels of senior and junior with the percentage of 40.4% and 37.9%.

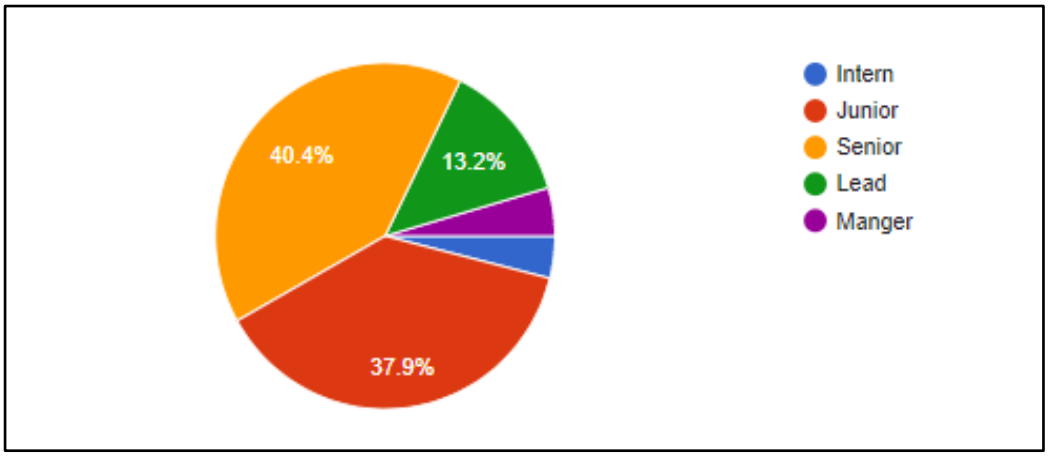


Figure 4. 4: Distribution of Designation

4.3.5 Total Work Experience

According to Figure 4.5 which represents the total work experience of the respondents, the majority have 5 to 10 years of experience and the second-highest category of respondents have 2 to 5 years of experience. As per percentages, 5-10 years of experience contain 43.3% of respondents and 2 to 5 years of experience contain 37.6% of respondents.

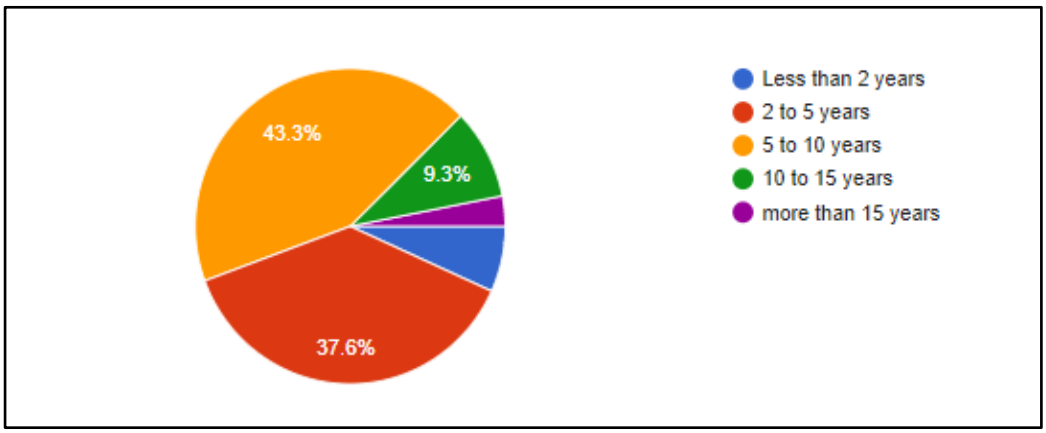


Figure 4. 5: Distribution of Total Work Experience

4.3.6 Number of Employees in the Company

As per Figure 4.6, the majority of respondents are working in large-scale companies corresponding to the number of employees, where 40.7% are in organizations with 100 to 500 employees and 31.2% are in organizations with more than 500 employees.

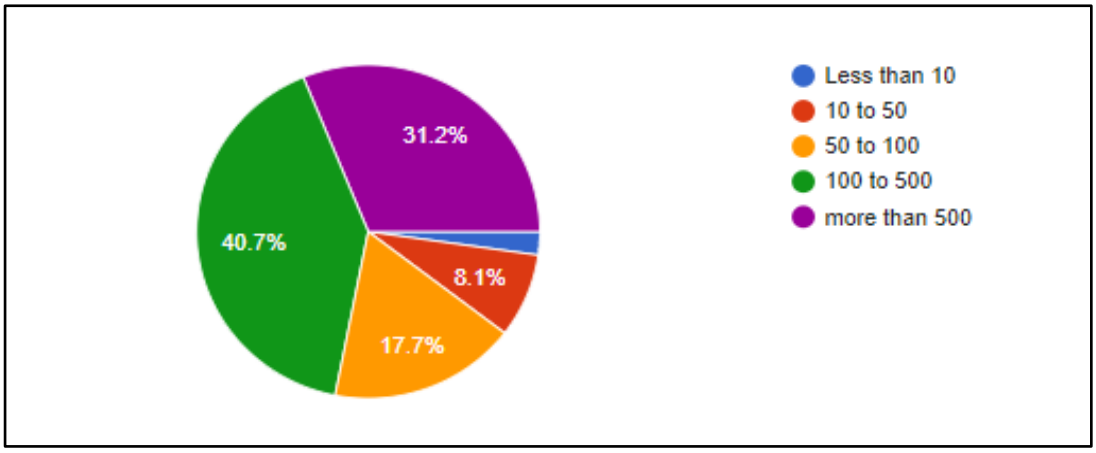


Figure 4. 6: Distribution of Company Size

4.4 Reliability Analysis

In this analysis, the internal consistency of the identified research instruments was determined through Cronbach's Alpha. It provides a measure of the internal consistency of a test or scale; it is expressed as a number between 0 and 1 (Tavakol & Dennick, 2011).

A simple random sampling method was used to decide the sample size of 373 from the total IT support and maintenance population of 12402. The questionnaire was dispensed to 550 employees in ITSM companies in Sri Lanka and a total number of 356 valid responses were collected. Those responses were used for the data analysis process. The following section exemplifies the results of each independent and dependent variable which were calculated by using SPSS, according to Cronbach's alpha coefficient.

4.4.1 IT Support and Maintenance Project Failures

ITSM project failures were measured using three items. Because the alpha value 0.742 > 0.7 (Figure 4.7), the internal consistency of project failures can be considered as in an allowable level.

Summary of Case Processing

		N	%
Cases	Valid	356	100.0
	Excluded[a]	0	0.0
	Total	356	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	No of Items
0.742	3

Figure 4. 7: Project failure - Reliability Statics

4.4.2 Knowledge Transfer Issues

Summary of Case Processing

		N	%
Cases	Valid	356	100.0
	Excluded[a]	0	0.0
	Total	356	100.0

a. Listwise deletion based on all variables in the proced ure.

Reliability Statistics

Cronbach's Alpha	No of Items
0.811	7

Figure 4. 8: Knowledge Transfer Issues - Reliability Statics

Seven items have been used to measure knowledge transfer issues and the alpha value is 0.811 > 0.7 (Figure 4.8). That means, there is a high internal consistency of scales that are used to measure knowledge transfer issues.

4.4.3 Lack of Technological Competencies

As per Figure, 4.9 the alpha value is 0.764 > 0.7 and internal consistency can be considered as in an acceptable level for lack of technological competencies.

Summary of Case Processing

		N	%
Cases	Valid	356	100.0
	Excluded[a]	0	0.0
	Total	356	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	No of Items
0.764	6

Figure 4. 9: Lack of Technological competencies - Reliability Statics

4.4.4 Leadership Issues

Four items have been used to measure leadership issues and the alpha value is 0.756 > 0.7 as shown in Figure 4.10. Therefore, the factor of Leadership issues is at an acceptable level with regards to reliability.

Summary of Case Processing

		N	%
Cases	Valid	356	100.0
	Excluded[a]	0	0.0
	Total	356	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	No of Items
0.756	4

Figure 4. 10: Leadership Issues - Reliability Statics

4.4.5 Information Security Breaches

Four items have been used to measure Information security breaches and the alpha value is 0.849 > 0.7 (Figure 4.11). Therefore, high internal consistency of scales can be found in Information security breaches.

Summary of Case Processing

		N	%
Cases	Valid	356	100.0
	Excluded[a]	0	0.0
	Total	356	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	No of Items
0.849	4

Figure 4. 11: Information Security Breaches - Reliability Statics

4.4.6 Unsatisfactory Cost Reduction

As per some existing literature alpha between 0.6 and 0.7 can also be considered as an acceptable level (Ursachi, Zait, & Horodnic, 2015). Therefore, the alpha level for

unsatisfactory cost reduction with a value of 0.651 (Figure 4.12) can be considered as an acceptable level with regard to reliability.

Summary of Case Processing

		N	%
Cases	Valid	356	100.0
	Excluded[a]	0	0.0
	Total	356	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	No of Items
0.651	4

Figure 4. 12: Unsatisfactory cost reduction - Reliability Statics.

4.4.7 Communication Issues

As shown in Figure 4.13, the Cronbach's alpha = 0.675 which is between 0.6 and 0.7. Therefore, can be considered as an acceptable level for this analysis.

Summary of Case Processing

		N	%
Cases	Valid	356	100.0
	Excluded[a]	0	0.0
	Total	356	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	No of Items
0.675	4

Figure 4. 13: Communication Issues - Reliability Statics

4.5 Validity Analysis

As per Table 4.2, Average Variance Extracted (AVE) values are above 0.5 for all the factors and as per 4.4 Reliability analysis, Cronbach's Alpha values are above 0.6, and out of 6 factors, 4 are above 0.7. Therefore, convergent validity can be proven within the study (Fornell & David, 1981).

Table 4. 2 Validity

Indicator Variables		Factors	AVE
KTI1	<---	KnowledgeTransferIssues	
KTI2	<---	KnowledgeTransferIssues	
KTI3	<---	KnowledgeTransferIssues	
KTI4	<---	KnowledgeTransferIssues	
KTI5	<---	KnowledgeTransferIssues	
KTI6	<---	KnowledgeTransferIssues	
KTI7	<---	KnowledgeTransferIssues	0.53
LTS1	<---	LackofTechnicalSkills	
LTS2	<---	LackofTechnicalSkills	
LTS3	<---	LackofTechnicalSkills	
LTS4	<---	LackofTechnicalSkills	
LTS5	<---	LackofTechnicalSkills	
LTS6	<---	LackofTechnicalSkills	0.52
LEI1	<---	LeadershipIssues	
LEI2	<---	LeadershipIssues	
LEI3	<---	LeadershipIssues	
LEI4	<---	LeadershipIssues	0.51
ISB1	<---	InformationSecurityBreaches	
ISB2	<---	InformationSecurityBreaches	
ISB3	<---	InformationSecurityBreaches	
ISB4	<---	InformationSecurityBreaches	0.50
UCR1	<---	UnsatisfactoryCostReduction	
UCR2	<---	UnsatisfactoryCostReduction	
UCR3	<---	UnsatisfactoryCostReduction	
UCR4	<---	UnsatisfactoryCostReduction	0.63
CIS1	<---	CommunicationIssues	
CIS2	<---	CommunicationIssues	0.55

CIS3	<---	CommunicationIssues	
CIS4	<---	CommunicationIssues	

4.6 Correlation Analysis

Linear regression analysis and correlation analysis are used to determine the correspondence between ITSM offshore outsourcing project failures and remaining independent variables (knowledge transfer issues, lack of technical competencies, leadership issues, unsatisfactory cost reduction, information security breaches, communication issues). Hypotheses were tested by using simple regression and correlation coefficients.

4.6.1 Correlation Analysis of Variables

Measuring the strength of linear relation between paired data was done by using Pearson's correlation. In each sample the value for the correlation coefficient is near either plus or minus 1, then it is said to be a perfect correlation. As one variable increases, the other variable tends to increase in a positive scenario or decrease in a negative scenario. If the value is 0, that means there is no linear relationship between variables. The strength and the direction between independent and dependent variables were measured in this analysis. The correlation between all the variables (independent + dependent) can be found in Table 4.3.

As per Table 4.3 ITSM project failures (PFL) due to knowledge transfer issues (KTI) has a significant linear relationship ($p < 0.01$) which tends towards a positive direction and denotes a positive correlation. There is moderate strength of association between PFL and KTI since r equals 0.400. But very close to weak since less than 0.39 is considered weak. PFL and Lack of technological competencies (LTS) also have a positive correlation ($p < 0.01$) and have better moderate strength compared to PFL and KTI since $r = 0.504$.

Likewise, all the pairs have a positive correlation ($p < 0.01$) with moderate strength where $0.39 < r < 0.59$. By considering the strength of association independent and dependent variable pairs can be rearranged in below descending order.

- PFL and CIS (Communication Issues) → 0.553
- PFL and UCR (Unsatisfactory Cost Reduction) → 0.548
- PFL and LEI (Leadership Issues) → 0.517
- PFL and LTS (Lack of Technical Skills) → 0.504
- PFL and ISB (Information Security Breaches) → 0.493
- PFL and KTI (Knowledge Transfer Issues) → 0.400

Correlations

		PFL	KTI	LTS	LEI	ISB	UCR	CIS
PFL	Pearson Correlation	1	.400**	.504**	.517**	.493**	.548**	.553**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000
	N	356	356	356	356	356	356	356
KTI	Pearson Correlation	.400**	1	.433**	.415**	.240**	.404**	.549**
	Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000	0.000
	N	356	356	356	356	356	356	356
LTS	Pearson Correlation	.504**	.433**	1	.460**	.433**	.494**	.433**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000	0.000
	N	356	356	356	356	356	356	356
LEI	Pearson Correlation	.517**	.415**	.460**	1	.593**	.497**	.437**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000	0.000
	N	356	356	356	356	356	356	356
ISB	Pearson Correlation	.493**	.240**	.433**	.593**	1	.570**	.469**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000	0.000
	N	356	356	356	356	356	356	356

UCR	Pearson Correlation	.548**	.404**	.494**	.497**	.570**	1	.546**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000		0.000
	N	356	356	356	356	356	356	356
CIS	Pearson Correlation	.553**	.549**	.433**	.437**	.469**	.546**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	
	N	356	356	356	356	356	356	356

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4. 3: Correlations

4.6.2 Correlation Analysis by Gender

Table 4.4 is shown the correlation analysis by gender and one response for "gender is not known" has been removed from the analysis. According to Table 4.4, there is a higher positive correlation for Lack of technical skills (LTS) and the category of men has a weaker positive relation for Knowledge transfer issues (KTI). That displays a weaker correlation (r = 0.371) in the sample which was not there before the split for gender (All the correlations are in positive moderate level).

Table 4. 4: Correlations by gender

Correlations

My gender is			PFL	KTI	LTS	LEI	ISB	UCR	CIS
Female	PFL	Pearson Correlation	1	.485**	.637**	.515**	.670**	.485**	.584**
		Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000
		N	128	128	128	128	128	128	128
	KTI	Pearson Correlation	.485**	1	.414**	.446**	.348**	.383**	.345**
		Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000	0.000
		N	128	128	128	128	128	128	128
	LTS	Pearson Correlation	.637**	.414**	1	.478**	.451**	.422**	.424**
		Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000	0.000
		N	128	128	128	128	128	128	128
	LEI	Pearson Correlation	.515**	.446**	.478**	1	.426**	.470**	.451**

		Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000	0.000
		N	128	128	128	128	128	128	128
	ISB	Pearson Correlation	.670**	.348**	.451**	.426**	1	.590**	.493**
		Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000	0.000
		N	128	128	128	128	128	128	128
	UCR	Pearson Correlation	.485**	.383**	.422**	.470**	.590**	1	.560**
		Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000		0.000
		N	128	128	128	128	128	128	128
	CIS	Pearson Correlation	.584**	.345**	.424**	.451**	.493**	.560**	1
		Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	
		N	128	128	128	128	128	128	128
Male	PFL	Pearson Correlation	1	.371**	.462**	.521**	.441**	.567**	.546**
		Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000
		N	227	227	227	227	227	227	227
	KTI	Pearson Correlation	.371**	1	.439**	.597**	.530**	.409**	.544**
		Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000	0.000
		N	227	227	227	227	227	227	227
	LTS	Pearson Correlation	.462**	.439**	1	.454**	.427**	.527**	.436**
		Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000	0.000
		N	227	227	227	227	227	227	227
	LEI	Pearson Correlation	.521**	.597**	.454**	1	.574**	.502**	.425**
		Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000	0.000
		N	227	227	227	227	227	227	227
	ISB	Pearson Correlation	.441**	.530**	.427**	.574**	1	.563**	.456**
		Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000	0.000
		N	227	227	227	227	227	227	227
	UCR	Pearson Correlation	.567**	.409**	.527**	.502**	.563**	1	.538**
		Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000		0.000
		N	227	227	227	227	227	227	227
	CIS	Pearson Correlation	.546**	.544**	.436**	.425**	.456**	.538**	1
		Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	

		N	227	227	227	227	227	227	227

**. Correlation is significant at the 0.01 level (2-tailed).

b. Cannot be computed because at least one of the variables is constant.

4.6.3 Correlation Analysis by Designation

As per Table 4.5 correlation analysis by designation is conducted based on two main categories. There Intern, Junior, Senior designation categories are grouped into employee category (EMP) and Lead designation category also added to manager category and both considered as manager category (MGR) since responsibilities are in the same level.

According to the Employees (EMP) group, all the variables are positively correlated, and other than knowledge transfer issues (KTI) which can be considered as weak (r = 0.340) all the remaining variables are in the strength of moderate.

When considering the Manager (EMP) group all the variables are positively correlated and have moderate strength.

Table 4. 5: Correlations by designation

Correlations

Designation			PFL	KTI	LTS	LEI	ISB	UCR	CIS
EMP	PFL	Pearson Correlation	1	.340**	.443**	.466**	.448**	.553**	.510**
		Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000
		N	293	293	293	293	293	293	293
	KTI	Pearson Correlation	.340**	1	.415**	.582**	.510**	.339**	.518**
		Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000	0.000
		N	293	293	293	293	293	293	293
	LTS	Pearson Correlation	.443**	.415**	1	.437**	.413**	.463**	.421**
		Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000	0.000
		N	293	293	293	293	293	293	293
	LEI	Pearson Correlation	.466**	.582**	.437**	1	.636**	.460**	.690**
		Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000	0.000
		N	293	293	293	293	293	293	293

	ISB	Pearson Correlation	.448**	.510**	.413**	.636**	1	.544**	.472**
		Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000	0.000
		N	293	293	293	293	293	293	293
	UCR	Pearson Correlation	.553**	.339**	.463**	.460**	.544**	1	.551**
		Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000		0.000
		N	293	293	293	293	293	293	293
	CIS	Pearson Correlation	.510**	.518**	.421**	.690**	.472**	.551**	1
		Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	
		N	293	293	293	293	293	293	293
MGR	PFL	Pearson Correlation	1	.572**	.677**	.662**	.618**	.533**	.689**
		Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000
		N	63	63	63	63	63	63	63
	KTI	Pearson Correlation	.572**	1	.482**	.403**	.413**	.579**	.434**
		Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000	0.000
		N	63	63	63	63	63	63	63
	LTS	Pearson Correlation	.677**	.482**	1	.497**	.458**	.576**	.436**
		Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000	0.000
		N	63	63	63	63	63	63	63
	LEI	Pearson Correlation	.662**	.403**	.497**	1	.406**	.593**	.432**
		Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000	0.000
		N	63	63	63	63	63	63	63
	ISB	Pearson Correlation	.618**	.413**	.458**	.406**	1	.540**	.432**
		Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000	0.000
		N	63	63	63	63	63	63	63
	UCR	Pearson Correlation	.533**	.579**	.576**	.593**	.540**	1	.543**
		Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000		0.000
		N	63	63	63	63	63	63	63
	CIS	Pearson Correlation	.689**	.434**	.436**	.432**	.432**	.543**	1
		Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	
		N	63	63	63	63	63	63	63

4.6.4 Results of Hypotheses Testing

Correlation of coefficient, simple regression analysis and multiple regression analysis are used for the hypothesis testing process. The averages of the 5-point Likert type values were used for the analysis where each variable consists of more than one question in the questionnaire. Therefore, above-mentioned data analysis methods are valid to test the hypothesis (Boone & Boone, 2012). Six hypotheses were tested, and detailed results are explained with tabular representations below.

4.5.4.1 Testing of First Hypothesis: H1

H1 – There is a positive relationship between knowledge transfer issues and ITSM off-shore outsourcing project failures.

Table 4. 6: Knowledge Transfer Issues - Model Summary

Model summary - Knowledge transfer issues regressed against ITSM project failures

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.400[a]	0.160	0.158	0.63571

a. Predictors: (Constant), KTI

Table 4. 7: Knowledge Transfer Issues - ANOVA

ANOVA - Knowledge transfer issues regressed against ITSM project failures

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.243	1	27.243	67.410	.000[b]
	Residual	143.063	354	0.404		
	Total	170.306	355			

a. Dependent Variable: PFL
b. Predictors: (Constant), KTI

Table 4. 8: Knowledge Transfer Issues - Coefficients

Coefficients - Knowledge transfer issues regressed against ITSM project failures

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.034	0.212		9.611	0.000
	KTI	0.491	0.060	0.400	8.210	0.000

a. Dependent Variable: PFL

As per Table 4.6, R (correlation coefficient) value is equal to 0.400 and that demonstrates, both positive and moderate correlation between knowledge transfer issues and IT support and maintenance project failures. The correlation of coefficient is a measure of evaluating the strength of the relationship between two variables. This means both dependent and independent variables move in the same direction. R square denotes a share of the variance of a dependent variable which is illustrated by an independent variable or variables in each study. Here the relevant R square value can be found in Table 4.6 and it is 0.160. That means 16% of the variability of IT support and maintenance project failures plots with knowledge transfer issues. The adjusted R square measures the fraction of variance only with the identified independent variable to the dependent variable and in this scenario that is 0.158 which is almost the same as the R square value.

The ANOVA is utilized to determine the significance of regression by allowing the statistical testing of the null hypothesis. As per Table 4.7, F-ratio for this scenario is 67.410 which can be considered as significant at $p < 0.05$ (In this scenario Alpha value equals sig = 0.000), and relevant significant variables can be found in Table 4.8. That means the F-ratio value would happen on its own and only have a chance of 0.05% or less. By considering these facts, the conclusion can be reached by mentioning that knowledge transfer issues and ITSM project failures have a statistically significant connection. Therefore, the null hypothesis ($H1_0$) can be rejected by allowing the alternative hypothesis. Therefore, knowledge transfer issues have a statistically significant positive

relationship with ITSM offshore outsourcing project failures, where the first hypothesis is evaluated.

4.5.4.2 Testing of the Second Hypothesis: H2

H2 – There is a positive relationship between the lack of technological competencies and ITSM offshore outsourcing project failures.

Table 4. 9: Lack of technological competencies - Model Summary

Model summary - Lack of technological competencies regressed against ITSM project failures

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.504[a]	0.254	0.252	0.59888

a. Predictors: (Constant), LTS

Table 4. 10: Lack of technological competencies - ANOVA

ANOVA - Lack of technological competencies regressed against ITSM project failures

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	43.339	1	43.339	120.836	.000[b]
	Residual	126.966	354	0.359		
	Total	170.306	355			

a. Dependent Variable: PFL

b. Predictors: (Constant), LTS

Table 4. 11: Lack of technological competencies - Coefficients

Coefficients - Lack of technological competencies regressed against ITSM project failures

	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	Sig.

1	(Constant)	1.763	0.184		9.603	0.000
	LTS	0.564	0.051	0.504	10.993	0.000

a. Dependent Variable: PFL

The correlation coefficient R= 0.504 as shown in Table 4.9, therefore lack of technological competencies and ITSM project failures have both positive and moderate connection between them. It denotes both independent and dependent variables moving in the same direction. As explained in the previous hypothesis, figures which show the variability have similar values where R square = 0.254 which plots 25.4% variability of ITSM project failures with regards to the lack of technological competencies and adjusted R square = 0.252 which describes the model generalizability.

Here also the ANOVA is used for null hypothesis testing and as denoted by Table 4.10, it can be finalized that F-ratio = 120.836 which is significant at $p < 0.05$ (In this scenario Alpha value equals sig = 0.000) and relevant significant variables can be found in Table 4.11. Therefore, a conclusion can be made that there is a less than 0.05% possibility that an F-ratio of this value would take place alone. Therefore, it can be finalized that a significant connection between a shortage of technological competencies and ITSM project failures exists, therefore alternative hypotheses can be accepted and reject the null hypothesis ($H2_0$). Therefore, the shortage of technological competencies has a statistically significant and positive relationship with IT support and maintenance project failures due to offshore outsourcing, where the second hypothesis is appraised.

4.5.4.3 Testing of the Third Hypothesis: H3

H3 – There is a positive relationship between leadership issues and ITSM offshore out-sourcing project failures.

Table 4. 12: Leadership issues - Model Summary

Model summary - Leadership issues regressed against ITSM project failures

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.517[a]	0.268	0.266	0.59355

a. Predictors: (Constant), LEI

Table 4. 13: Leadership Issues - ANOVA

ANOVA - Leadership Issues regressed against ITSM project failures

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	45.593	1	45.593	129.416	.000[b]
	Residual	124.713	354	0.352		
	Total	170.306	355			

a. Dependent Variable: PFL

b. Predictors: (Constant), LEI

Table 4. 14:Leadership Issues - Coefficients

Coefficients - Leadership Issues regressed against ITSM project failures

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.871	0.168		11.129	0.000
	LEI	0.533	0.047	0.517	11.376	0.000

a. Dependent Variable: PFL

As denoted by Table 4.12, the correlation of coefficient R = 0.517, therefore it can be considered as a moderate positive correlation between leadership issues and ITSM project failures. That means both the independent variable and the dependent variable move in

the same direction. Variability figures R square = 0.268 and adjusted R square = 0.266 explained that 26.8% of ITSM project failures can be plotted by leadership issues.

Here also the null hypothesis is tested by using ANOVA and as represented by Table 4.13. It can be concluded that F-ratio = 129.416 which is significant at $p < 0.05$ (In this scenario Alpha value equals sig = 0.000) where the significance of variables is shown in Table 4.14. As per these results, the scenario that the F-ratio value would happen on its own only has a chance of 0.05% or less. Because of that, the null hypothesis ($H3_0$) is rejected and represented that leadership issues have a statistically significant positive relationship with ITSM offshore outsourcing project failures, where the third hypothesis is tested.

4.5.4.4 Testing of the Fourth Hypothesis: H4

H4 – There is a positive relationship between information security breaches and ITSM offshore outsourcing project failures.

Table 4. 15: Information security breaches - Model Summary

Model summary - Information security breaches regressed against ITSM project failures

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.493[a]	0.243	0.241	0.60330

a. Predictors: (Constant), ISB

Table 4. 16: Information security breaches - ANOVA

ANOVA - Information security breaches regressed against ITSM project failures

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	41.458	1	41.458	113.904	.000[b]
	Residual	128.847	354	0.364		

Total	170.306	355			

a. Dependent Variable: PFL

b. Predictors: (Constant), ISB

Table 4. 17: Information security breaches - Coefficients

Coefficients - Information security breaches regressed against ITSM project failures

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.288	0.141		16.270	0.000
	ISB	0.428	0.040	0.493	10.673	0.000

According to Table 4.15, there is a positive moderate correlation between Information security breaches and ITSM project failures, because the correlation of coefficient value R is equal to 0.493. Both R square and adjusted R square have almost similar figures where the R square value is 0.243 and the adjusted R square is equal to 0.241. That means 24.3% of ITSM project failures can be plotted by information security breaches.

Here the null hypothesis is tested by using ANOVA and as per Table 4.16, F-ratio = 113.904 which can be considered as significant since the p-value is less than 0.05 (In this scenario Alpha value equals sig = 0.000) where the significant variables are shown in Table 4.17. As per these results, the F-ratio value would happen on its own and only have a chance of 0.05% or less. Therefore, the null hypothesis ($H4_0$) can be rejected and represents that the factor information security breaches have a statistically significant positive relationship with ITSM offshore outsourcing project failures, where hypothesis 4 has been tested.

4.5.4.5 Testing of Fifth Hypothesis: H5

H5 – There is a positive relationship between unsatisfactory cost reduction and ITSM offshore outsourcing project failures.

Table 4. 18: Unsatisfactory cost reduction - Model Summary

Model summary - Unsatisfactory cost reduction regressed against ITSM project failures

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.548[a]	0.300	0.298	0.58025

a. Predictors: (Constant), UCR

Table 4. 19: Unsatisfactory cost reduction - ANOVA

ANOVA - Unsatisfactory cost reduction regressed against ITSM project failures

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	51.117	1	51.117	151.822	.000[b]
	Residual	119.188	354	0.337		
	Total	170.306	355			

a. Dependent Variable: PFL

b. Predictors: (Constant), UCR

Table 4. 20: Unsatisfactory cost reduction - Coefficients

Coefficients - Unsatisfactory cost reduction regressed against ITSM project failures

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.582	0.179		8.853	0.000
	UCR	0.566	0.046	0.548	12.322	0.000

a. Dependent Variable: PFL

As denoted by Table 4.18, the correlation of coefficient R = 0.548, therefore it can be considered as a moderate positive correlation between unsatisfactory cost reduction and

ITSM project failures. That means both the independent variable and the dependent variable move in the same direction. Variability figures R square = 0.300 and adjusted R square = 0.298 explained that 30.0% of ITSM project failures can be plotted by unsatisfactory cost reduction.

ANOVA is used to test the null hypothesis and as represented by Table 4.19, the F-ratio value is 151.822 and it can be considered as significant since the p-value is less than 0.05 (In this scenario Alpha value equals sig = 0.000) where the significance of variables is shown in the Table 4.20. Therefore, a conclusion can be made that there is a less than 0.05% possibility that a F-ratio of this value would take place alone. Therefore, the null hypothesis ($H5_0$) can be rejected and represented that unsatisfactory cost reduction has a statistically significant positive relationship with ITSM offshore outsourcing project failures, where hypothesis 5 has been tested.

4.5.4.6 Testing of Sixth Hypothesis: H6

H6 – There is a positive relationship between communication issues and ITSM offshore outsourcing project failures.

Table 4. 21: Communication issues - Model Summary

Model summary - Communication issues regressed against ITSM project failures

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.553[a]	0.306	0.304	0.57768

a. Predictors: (Constant), CIS

Table 4. 22: Communication issues - ANOVA

ANOVA - Communication issues regressed against ITSM project failures

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	52.171	1	52.171	156.334	.000[b]
	Residual	118.135	354	0.334		
	Total	170.306	355			

a. Dependent Variable: PFL

b. Predictors: (Constant), CIS

Table 4. 23: Communication issues - Coefficients

Coefficients - Communication issues regressed against ITSM project failures

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.692	0.167		10.107	0.000
	CIS	0.568	0.045	0.553	12.503	0.000

a. Dependent Variable: PFL

The correlation coefficient R= 0.553 as shown in Table 4.21, explains a moderate and positive connection between ITSM project failures and communication issues. It denotes both independent and dependent variables move in the same direction. As explained in all the above five hypotheses, figures which show the variability have similar values where R square = 0.306 which plots 30.6% variability of ITSM project failures with regards to the communication issues and adjusted R square = 0.304 which describes us the model generalizability.

Here also the null hypothesis is tested by using ANOVA and as denoted by Table 4.22, F-ratio = 156.334 and it can be considered as significant since the p-value is less than 0.05

(In this scenario Alpha value equals sig = 0.000) and relevant significant variables can be found in Table 4.23. As per these results, the F-ratio value would happen on its own and only have a chance of 0.05% or less. Because of that, it can be finalized that a statistically significant connection between communication issues and ITSM project failures exists, therefore the null hypothesis ($H6_0$) can be rejected and accept the alternative hypothesis. Therefore, communication issues have a statistically significant positive relationship with ITSM offshore outsourcing project failures, where hypothesis 6 has been tested.

4.7 Multiple Regression Analysis

Multiple regression is an extended version of simple linear regression where statistical techniques were used to predict the outcome of response (dependent) variables upon several explanatory (independent) variables.

Table 4. 24: Multiple regression of all variables - Model Summary

Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.640[a]	0.410	0.400	0.53646

a. Predictors: (Constant), CIS, UCR, KTI, LEI, ISB, LTS

Table 4. 25: Multiple regression of all variables - ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	69.866	6	11.644	40.461	.000[b]
	Residual	100.440	349	0.288		
	Total	170.306	355			

a. Dependent Variable: PFL

b. Predictors: (Constant), CIS, UCR, KTI, LEI, ISB, LTS

Table 4. 26: Multiple regression of all variables - Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	0.913	0.213		4.291	0.000
	KTI	-0.084	0.080	-0.068	-1.045	0.297
	LTS	0.136	0.085	0.122	1.598	0.111
	LEI	0.162	0.075	0.157	2.152	0.032
	ISB	-0.024	0.063	-0.028	-0.388	0.698
	UCR	0.334	0.053	0.323	6.283	0.000
	CIS	0.244	0.076	0.238	3.203	0.001

As per Table 4.24 independent variable unsatisfactory cost reduction, communication issues and leadership issues are significant because their p-values are 0.000, 0.001, and 0.032 which are less than the common alpha level of 0.05. But knowledge-transfer issues (0.297), lack of technological competencies (0.111), and information security breaches (0.698) cannot be considered as significant where their common alpha level is 0.05. That means they are not statistically significant and unable to include the model of ITS offshore outsourcing project failures. By considering all the above facts, the model for ITSM offshore outsourcing project failures can be drawn as below.

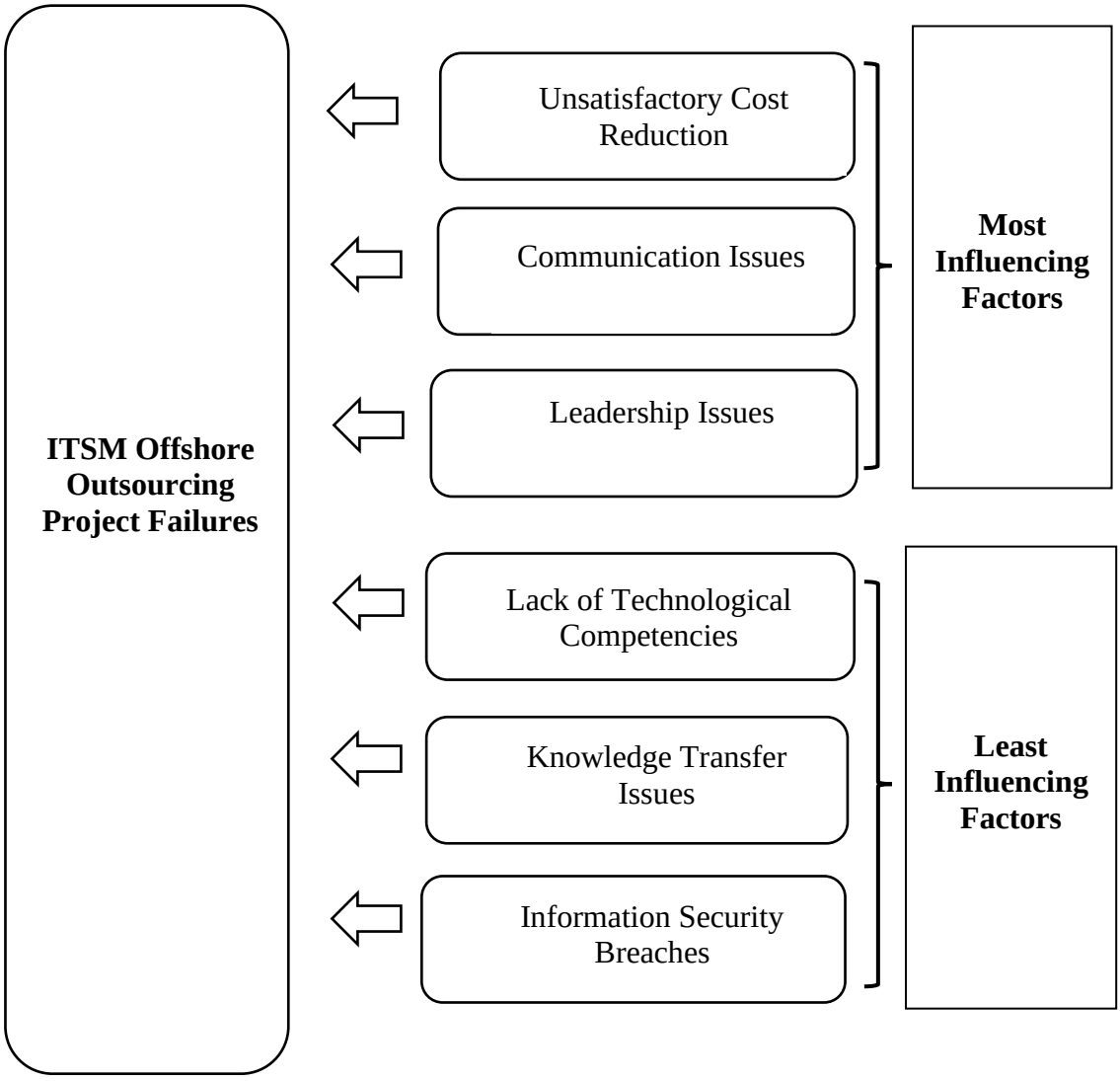


Figure 4. 14: Influencing Factors

5 RECOMMENDATIONS AND CONCLUSION

This study was conducted to identify the methods for effective offshore outsourcing in ITSM projects in Sri Lanka by examining the connection with factors affecting ITSM project failures. All the required data was gathered by using the mixed method, consisting of four pre-survey interviews with industry experts and an online questionnaire. After the completion of data gathering, analysis was done by using Regression analysis and Pearson's Correlation. This section contains the recommendations and the conclusion of the study which were derived from the gathered information.

5.1 Discussion and Recommendations

Nowadays most organizations are trying to outsource their IT-related task to offshore organizations for various reasons. But a considerable number of organizations are unable to fulfill their targets due to project failures. When considering the ITSM field there are a limited number of research discussed the failure factors and most of the research only focused on a single reason without focusing on the entire picture. By gathering the most relevant and highlighted factors in literature and outcomes received by pre-survey interviews, this study could narrow the research circle to six factors. These six factors are further categorized into two sections with the most influencing factors to one side and least influencing factors to the other side and that lead to the final framework which represents the relationship between influencing factors and ITSM project failures.

The first analysis was conducted to measure the reliability which denotes the rationality of research instruments. Cronbach's alpha values for all the six variables are around 0.7 and values for Average Variance Extracted (AVE) are above 0.5. That indicates all the responses of 356 responders were supplied with a sufficient understanding of the questionnaire and that implies the reliability and validity of this study.

When considering the sample of the study, it was divided based on gender where the majority (63.8%) are in the male category and the remaining are in the category of women. Out of the total sample respondent's majority (53.9%) are in the age range of 25 – 30 and

72.5% have a bachelor's degree. The sample was further divided based on work experience and a high proportion (43.3%) had 5 – 10 years of total experience in the IT domain and the second-highest (36.6%) only had total experience in between 2 to 5 years. Designations were divided based on seniority which contains categories of the intern, junior, senior, lead, and manager. Nearly 80% of the respondents are in either junior or senior roles where the junior role represented 37.9% and senior role represented 40.4% of the total sample. Finally, the sample was divided based on the number of employees in each respondent's working organization and 40.7% of the respondents are working in an organization with 100 – 500 employees.

When considering the Person correlation analysis, all the independent variables have a positive ($p < 0.01$) and moderate ($0.39 < r < 0.59$) strength. If correlations are placed into the ascending order, correlation communication issues come to the top of the list with $r = 0.553$ followed by unsatisfactory cost reduction $r = 0.548$, leadership issues $r = 0.517$, lack of technological competencies $r = 0.504$, information security breaches $r = 0.493$ and knowledge transfer issues $r = 0.400$.

According to the multiple regression analysis, the R squared value is 0.41. That means, only 41% of the movement in the dependent variable is explained by the combination of all the independent variables. As per industry expert suggestions, only 6 independent variables were included in the research out of 8 independent variables found from the existing literature. Therefore, if all 8 independent variables were used for the research, the R squared value could be further increased.

All the hypotheses were tested by using the Simple regression method and ITSM offshore outsourcing project failures were considered as the dependent variable and all other remaining variables considered as the independent variables.

In the first hypothesis testing, the relation between knowledge transfer issues (independent variable) and IT support and maintenance project failures (dependent variable) was tested and the correlation coefficient ($R = 0.553$) indicates that there is a positive correlation between the independent variable and dependent variable. Here the null hypothesis was

rejected because according to the ANOVA table significant value is 0.000 and that is less than the p-value which is 0.05. Therefore, the first hypothesis can finalize as,

- When there are knowledge transfer issues in ITSM offshore outsourcing, there are project failures.

Cognitive load, the supportiveness of the trainer, and familiarity with the knowledge transfer process have been used as the dimensions to measure knowledge transfer issues. Due to lack of resources, most of the organizations try to conduct the knowledge transfer within a limited time and trainees must absorb high cognitive loads from the trainer. But the outcome of that process had ended up with failures where the majority of the important knowledge was not absorbed by the trainees. Once those trainees started to work on behalf of offshore organizations, they are unable to use the knowledge gained through the KT process due to knowledge gaps. In other cases, the KT process had not covered the depth of the knowledge. Although the trainees are satisfied with the KT process they are still unable to work individually due lack of a deep level understanding of existing systems. Therefore, identifying the correct cognitive load is crucial. After identifying that, organizations need to plan the KT process by considering the depth of the knowledge to be transferred and the most suitable time frame for the KT process. Other than the KT process, the supportiveness of the trainer is a critical factor that is impacting project failures. In most of the scenarios, after a successful knowledge transfer process, the trainer lost his current role where that work is replaced by the offshore organization. Because of this psychological factor trainers are not keen to provide their dedicated effort to the KT process. To mitigate this, organizations need to provide the after-transition career plan to the trainer and encourage him to conduct a successful KT process. Finally, the familiarity or the previous experience of the KT process is considered where lack of familiarity leads to poor absorb targets which will lead to knowledge gaps and eventually the project failures. To avoid these types of scenarios, organizations can create teams with few employees with previous experience or organizations can do heads-up programs before

the actual KT process. By following these types of precautions organizations can reduce project failures.

In the second hypothesis testing, Lack of technological competencies considered as the independent variable, and correlation of coefficients used to check the relationship. The value for R is 0.504 and that denotes a positive moderate correlation between the independent and dependent variables. That means both variables move in the same direction. There also ANOVA table significant value is 0.000 and that is less than the p-value which is 0.05. Therefore, the second hypothesis can be derived as,

- When there are resources with a lack of technological competencies in offshore outsourcing, there are failures in ITSM projects.

Individual technological skill is a key factor of ITSM project success. Unlike other software-related fields, in the IT support and maintenance domain, resources must cover different shifts to provide effective support. Therefore, support teams must split their resources into different shifts and cover the service at the optimum level. Therefore, in each situation, there are a limited number of resources and issues that need to be managed by on-shift resources. The resolution to the issue is highly dependent on the skills of that individual resource. Because of this rarity of resources with relevant technological skills, resolutions to issues do not come within given service-level agreements. That level of breaches leads to project failures. To avoid those types of scenarios, Organizations must recruit candidates with technological skills which are suited to the project. This suitability can be measured by technological certifications up to some extent. Once employees start to work on projects, organizations need to understand the future demands and skill expectations of the project and encourage employees to reach the expected level of skills. This is identified as the organizational understanding and support to the employee and lacking these dimensions, the ITSM projects can end up with failures.

Leadership issues were tested in the third hypothesis testing and correlation of coefficient R = 0.517. That means there is a moderate positive correlation between leadership issues and ITSM project failures and both independent and dependent variables are moving in

the same direction. According to ANOVA, the significant value is 0.000 and that is less than the p-value (0.05). Therefore, the null hypothesis was rejected.

- When the leader is unable to perform the leadership role effectively in offshore outsourcing, there are failures in ITSM projects.

In offshore outsourcing projects, handling cultural differences is crucial where project handover occurs between two different countries. Although these cultural differences need to be managed by all the employees in the organization, high weight is on the leadership. Because he is one of the main contact points between offshore and onshore. Once an issue arrives from either end leadership needs to get the responsibility and work towards the resolution by winning both business personals and his teammates. But finding the expected level of leadership is very difficult. He must be a person with a clear understanding of project goals and a quick decision-maker. Because support projects are always in the live phase and wrong or late decisions may end up with critical project failures. Therefore, when forming teams of ITSM projects, priority should be given to leadership selection. After that, he can build his team to reach project goals.

In the fourth hypothesis testing, information security breaches are considered as the independent variable and the value correlation of coefficient R is equal to 0.493. This means there is a positive and moderate correlation between the independent variable and the dependent variable. According to the ANOVA table p-value of 0.05 is higher than the significant value of 0.000 and due to that null hypothesis was rejected.

- When information security breaches occurred in ITSM offshore outsourcing, there are project failures.

Information security is important in production support projects. Although most the developed countries have better security policies and coverage, most of the developing countries are not at that level. Therefore, when outsourcing projects, understanding the legal background of the two countries is crucial. If there are any differences, those need to be addressed. Organizations must cover the legal background in employee recruitment

agreements and request employees understand the core of those legal agreements. To avoid failures due to a lack of understanding of legal backgrounds, organizations can check the employee's understanding by maintaining informative sessions to measure the individual understanding of employees and fix the loopholes. Unethical activities also impact information security breaches. Therefore, employees should be given opportunities to handle the production data after a critical background check. Because there were ITSM project failures due to unethical activities.

Unsatisfactory cost reduction with ITSM project failures tested in the fifth hypothesis and correlation of coefficient R = 0.548. That denotes a positive moderate correlation between the independent and dependent variables. That means both variables move in the same direction. There also ANOVA table significant value is 0.000 and that is less than the p-value which is 0.05. Therefore, the fifth hypothesis can be derived as,

- When there is unsatisfactory cost reduction in ITSM offshore outsourcing, there are project failures.

The main goal of offshore outsourcing has cost reduction and that is common to the offshore IT support and maintenance field as well. But due to reasons like high-cost transition and hidden cost, this main goal is difficult to be achieved. The main reasons behind the high-cost transition are the planning issues of the transition stage. This would add extra costs like travel, accommodations, etc., and also delay the live phase of the project which will eventually delay the income of the project. This is a reason for client dissatisfaction which could lead to project failures. Hidden costs also can occur due to planning issues along with other reasons like poor requirement gathering. These types of issues can be reduced by effective planning and quality requirement gathering plus establishing proper agreements before initiating the project.

The last hypothesis was also tested by using simple regression and a correlation coefficient of R= 0.553. Communication issues tested with ITSM project failures and a positive moderate correlation can be identified. According to the ANOVA, the table value is

significant where 0.000 is less than the p-value. Therefore, the null hypothesis was rejected.

- When there are communication issues in ITSM offshore outsourcing, there are project failures.

When handling projects connecting more than one country, communication is a key factor. Employees should be able to be fluent in a foreign language for clear communication. In addition to employees having the required communication skills, they should be confident enough to maintain clear communication with the onshore members. This is highly important in ITSM projects where the majority of the highly impacted incidents are managed through conference calls. Employees need to identify the issue and communicate to the audience for correct resolution and to request the necessary inputs from other teams. Other than mentioned individual communication issues, companies also need to provide full attention to reduce the communication gaps. Deploying onshore resources is one of the main actions which organizations can take. Maintaining professionalism in communication is also important where end-user satisfaction is highly dependent on that. Therefore, to reduce ITSM project failures, communications issues need to be rectified.

5.2 Research Limitations

There were few limitations while selecting the sample for this study because there was not any reference regarding the exact number of Offshore ITSM headcount in Sri Lanka. Therefore, the total number of ITSM support headcount was considered as the population and calculated the sample size according to that value. This study does not cover all the ITSM companies in Sri Lanka and that is another limitation related to the sample size of the study. Although there were responses from more than 15 companies, most of the respondents were from 3 major companies in Sri Lanka.

There were some question points regarding the seriousness of the respondents. Because some respondents only used one value in the Likert scale for all the questions and in some cases, they used random patterns for the answers.

This study is only limited to the Sri Lankan context and the findings may differ for the other countries based on various factors like local culture, quality of the educational level, technological level, etc.

5.3 Future Works

The main intention of this research is to study the factors affecting ITSM project failures due to offshore outsourcing and suggest methods to mitigate those drawbacks. As research among a limited number of research which is focused on ITSM project failures, this study can be used for future studies. By using this study as the baseline, future studies can be performed to promote ITSM projects in Sri Lanka and attract more foreign projects for local organizations.

Although the mixed method is used for the study, more weight is on the quantitative approach. Therefore, future researchers can focus more on qualitative approaches and do further studies. Rather than using qualitative study inputs for improving quantitative research, a separate analysis can be done only by using interview inputs in future studies to check the outcomes.

Finally, similar kinds of research can be performed to capture the effectiveness of the methods suggested by industry experts and come up with a framework for that. The same techniques can be used for that study, which was used in this research to come up with a framework for ITSM project failure factors.

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APPENDIX A: PRE-SURVEY QUESTIONNAIRE

1. Could you please provide a small description of your current role in the organization?
2. How many years have you worked on IT support and maintenance projects?
3. What do you think about offshore IT support and maintenance projects in Sri Lanka?
    a. Have you experienced major failures in ITSM projects?
    b. What do you define as a major failure?
    c. What kind of aftereffects could occur after such a failure?
4. What do you think about IT professionals who are engaging with ITSM projects in Sri Lanka?
    a. Are they having the required technological competencies?
    b. Do they have the required communication skills?
    c. What do you think about their attitudes against industry expectations?
5. What do you think about the Sri Lankan organizations which are handling ITSM projects?
    a. Are they in a better position compared to other subcontinent countries?
    b. Do they have a better customer base especially in the US and Europe region?
6. Do you think that the knowledge transfer issue is a reason behind the ITSM project's failure? If yes,
    a. Please provide reasons for that.
    b. What kind of dimensions are you suggesting, to measure knowledge transfer issues?
    c. What solutions are you suggesting, to overcome this issue?
7. Do you think that lack of technological competencies is a reason behind ITSM project failure? If yes,
    a. Please provide reasons for that.
    b. What kind of dimensions are you suggesting, to measure the lack of technological competencies?
    c. What solutions are you suggesting, to overcome this issue?
8. Do you think that issues in leadership are a reason behind ITSM project failure? If yes,

a. Please provide reasons for that.

b. What kind of dimensions are you suggesting, to measure leadership issues?

c. What solutions are you suggesting, to overcome this issue?

9. Do you think that breaches of information security are a reason behind ITSM project failure? If yes,

    a. Please provide reasons for that.

    b. What kind of dimensions are you suggesting, to measure leadership issues?

    c. What solutions are you suggesting, to overcome this issue?

10. Do you think that unsatisfactory cost reduction is a reason behind the ITSM project's failure? If yes,

    a. Please provide reasons for that.

    b. What kind of dimensions are you suggesting, to measure leadership issues?

    c. What solutions are you suggesting, to overcome this issue?

11. Do you think that the retention of key employees in a project is a reason behind ITSM project failure? If yes,

    a. Please provide reasons for that.

    b. What kind of dimensions are you suggesting, to measure leadership issues?

    c. What solutions are you suggesting, to overcome this issue?

12. Do you think that company politics is a reason behind the ITSM project failures? If yes,

    a. Please provide reasons for that.

    b. What kind of dimensions are you suggesting, to measure leadership issues?

    c. What solutions are you suggesting, to overcome this issue?

13. Do you think that issues in communication are the reason behind the ITSM project failures? If yes,

    a. Please provide reasons for that.

    b. What kind of dimensions are you suggesting, to measure leadership issues?

    c. What solutions are you suggesting, to overcome this issue?

14. Anything else you wish to share?

APPENDIX B: QUESTIONNAIRE

Project failure can be identified by using one or more of the below features. Answer to below questions considering the IT support and maintenance project failures that you have seen and experienced.

- Discontinuation of the entire project and handover to another offshore organization.
- Discontinuation of the entire project and handover back to the mother (onshore) organization.
- Partially handover the project to another offshore organization or back to the mother organization

	Q No	Question
	1	My gender is,
	2	My age between,
	3	My highest educational qualification is,
	4	I am currently working as a,
	5	My total working experience is,
	6	Total number of employees in my company,
IT Support and Maintenance Project failures		
	7	I feel IT support and maintenance projects have a better operation quality in onshore than in offshore.
	8	I have experienced/ seen instability in IT support and maintenance projects after a poor offshore migration process.
	9	I feel an IT support and maintenance project will fail within five years of the period due to the poor offshore migration process.
Knowledge Transfer Issues		
Managing cognitive Load	10	I am not satisfied with the knowledge transfer period provided for me before the handover of the project.

	11	I was unable to manage the majority of the support task by only referring to the knowledge transfer conducted during the project transition.
Supportiveness of the Trainer	12	I believe the trainer who provided the KT, did not have sufficient domain knowledge to conduct a successful KT session.
	13	I feel the trainer did not provide his maximum effort during the entire KT period.
	14	As I am aware, there were not any alternative job opportunities provided by the organization for the trainer after the 100% project handover.
Familiarity of the Knowledge Transfer Process	15	Before participating in the KT program, I was not fully aware of the KT process (Ex: - Stages like quality gates, shadowing process, wargaming stage, etc.)
	16	Management of my organization did not provide heads-up of the KT process before starting the actual knowledge transfer.
Lack of Technological Competencies		
Individual Technical Skills.	17	I feel that my organization did not validate my technical skills with the required skills for the project when I was recruiting for the project.
	18	The majority of my team members were unable to manage their individual tasks without seeking other technical aid.
	19	I was not satisfied and confident about my technical skills regarding the project activities.
	20	I believe having technical certifications can improve the productivity of IT support individuals.
Organizational Understanding and Support	21	I believe the management of my organization did not have a clear view of the technical skills of each employee.
	22	I feel that I have not received enough aid from my organization to improve my technological competencies.
Leadership Issues		

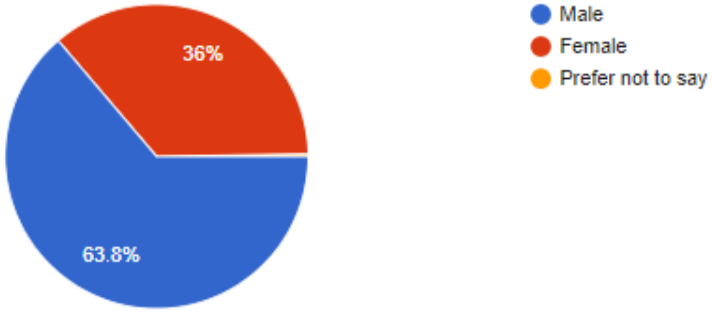
Handle Cultural Differences	23	I believe leadership in my project did not have the capability to handle the cultural difference between onshore and offshore while filling the gaps.
	24	I believe the close collaboration of offshore and onshore is highly dependent on the leadership of the project.
Decision Making Skills	25	I feel that my leadership did not take the correct decisions at the correct time.
Clarity of Goals	26	I feel my leadership did not have a clear picture of the entire project and the offshore outsourcing process.
Information Security Breaches		
Legal Background	27	I was not aware of the major security policies of both of my onshore and offshore organization situated regions.
	28	I have not carefully studied the legal agreements between myself and the organization before entering the offshore support project.
Ethical Principles	29	I did not have a clear understanding of the privacy of the production data which I was handling with.
	30	I have experienced information security breaches within my project which were occurred by mistake or unethical manner.
Unsatisfactory Cost Reduction		
High Cost of Transition	31	I and my team had to spend more time in the project transition phase than estimated at the beginning.
	32	I did not receive extra compensation benefits within the project transition phase although I performed well.
Hidden Cost Coverage	33	Although the onshore organization was earning high-profit margins, those benefits were not shared between offshore employees.
	34	My management pushed us towards cost reduction (reduce unnecessary calls to onshore etc.) and there were cost cuts directly impacting me (Ex: - cutting of shift allowance, transport allowance).
Communication Issues		

Clear Communication	35	I did not have the ability to clearly communicate with senior stakeholders without confusing them with poor language skills.
	36	When I was facing an issue that I was unable to solve, I hesitated to communicate with onshore and seek help due to my communication issues.
Organizational Support	37	My management did not take necessary action to reduce communication gaps between onshore and offshore (Ex: - Deploying team members to onshore etc.)
Maintain Professionalism	38	Most of the time, I was unable to speak politely and maintain professionalism with clients and senior stake holders in stressful situations.

APPENDIX C: SUMMARY OF THE ANSWERS

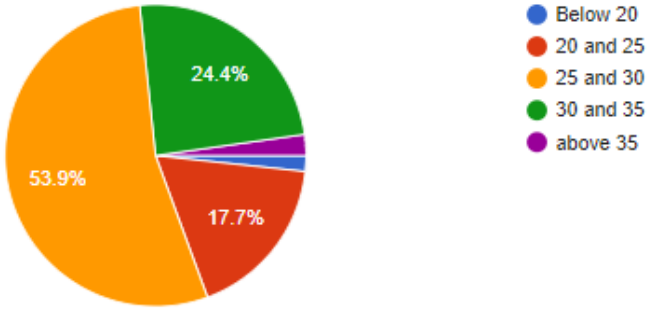
My gender is

356 responses



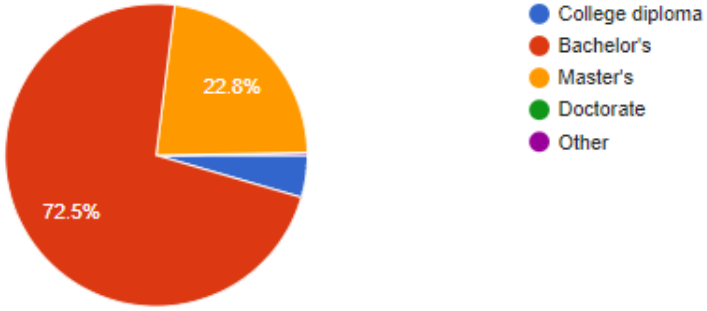
My age between

356 responses



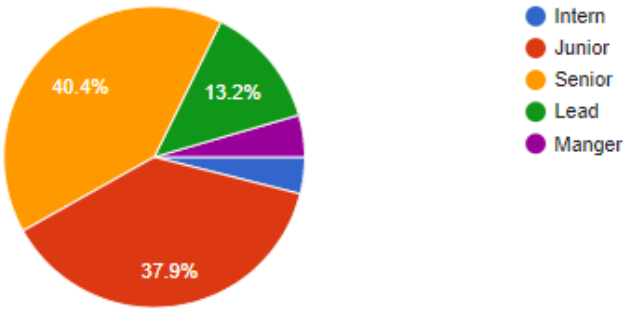
My highest educational qualification is

356 responses



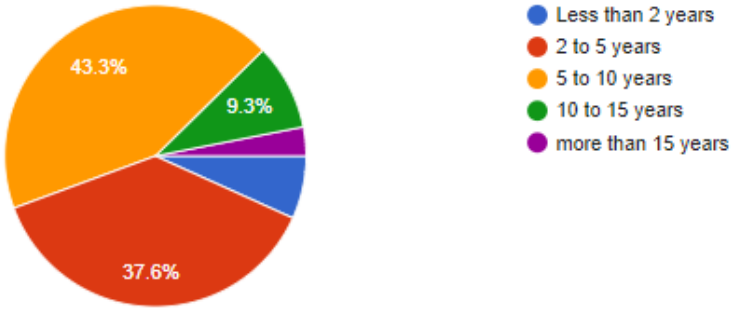
I am currently working in a category of

356 responses



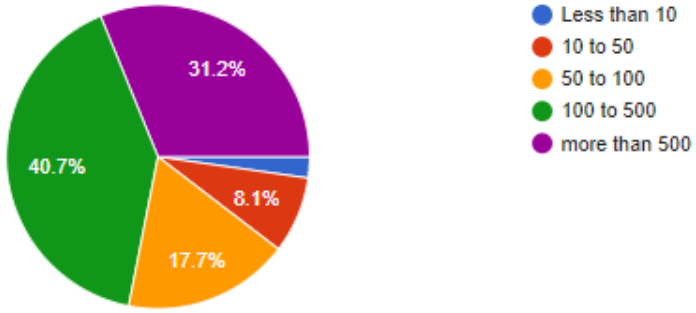
My total working experience is

356 responses



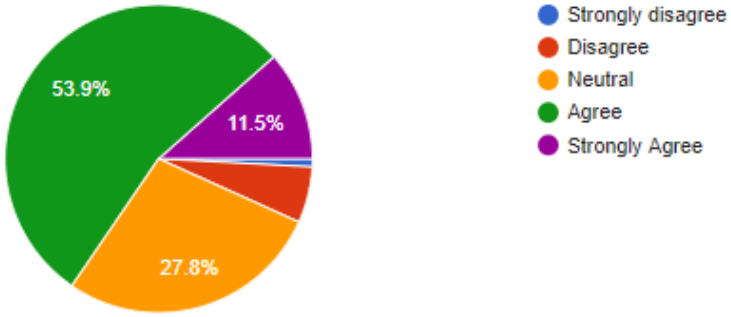
Total number of employees in my company

356 responses



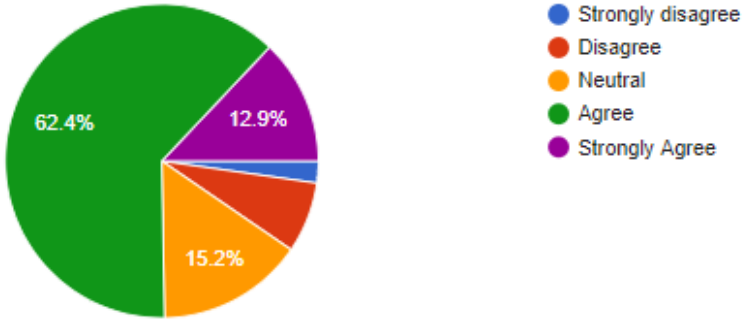
I feel IT support and maintenance projects have a better operation quality in onshore than in offshore

356 responses



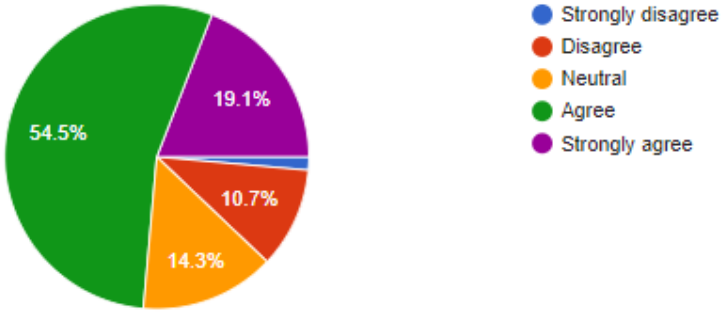
I have experienced/ seen instability in IT support and maintenance projects after a poor offshore migration process

356 responses



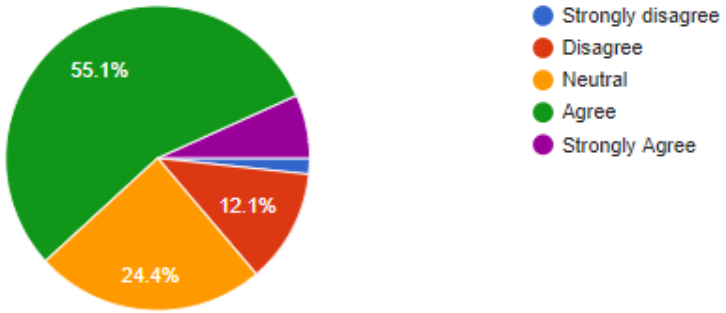
I feel an IT support and maintenance project will fail within five years of period due to the poor offshore migration process

356 responses



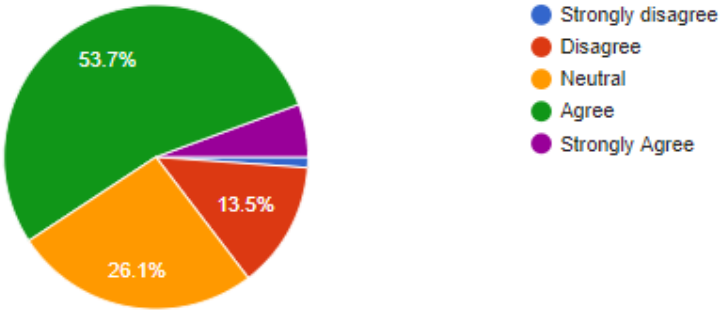
I am not satisfied with the knowledge transfer process provided for me before handing over the project

356 responses



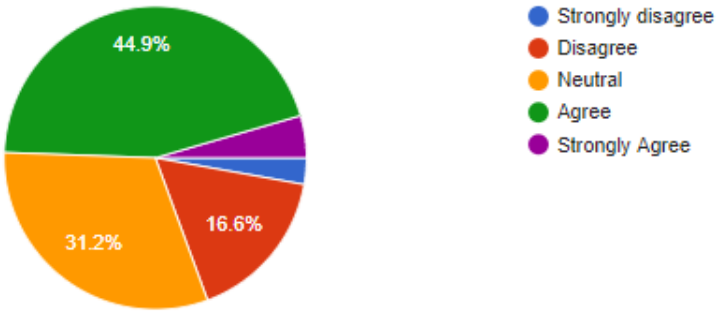
I was unable to manage majority of the support tasks only with the knowledge gained through the KT process

356 responses



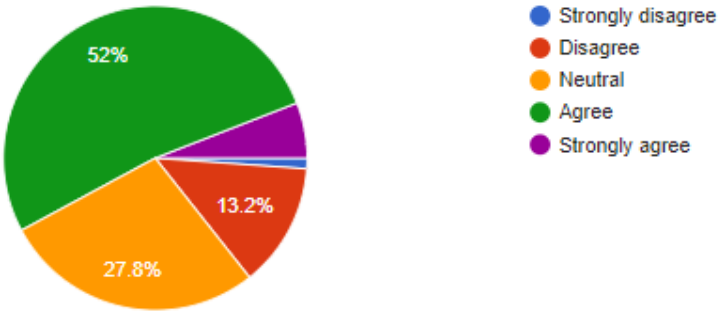
I believe the trainer who provided the KT, did not have the sufficient domain knowledge to conduct a successful KT session

356 responses



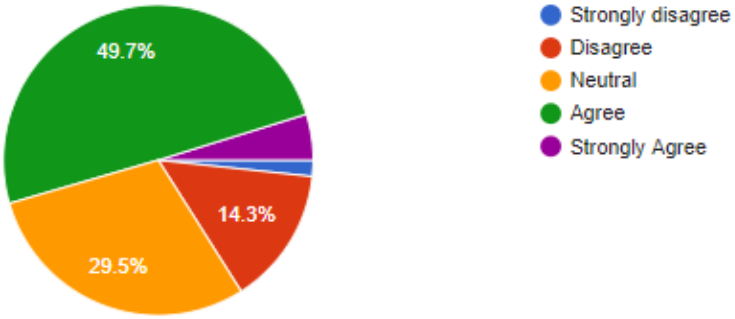
I feel the trainer did not put his best effort in the entire KT period

356 responses



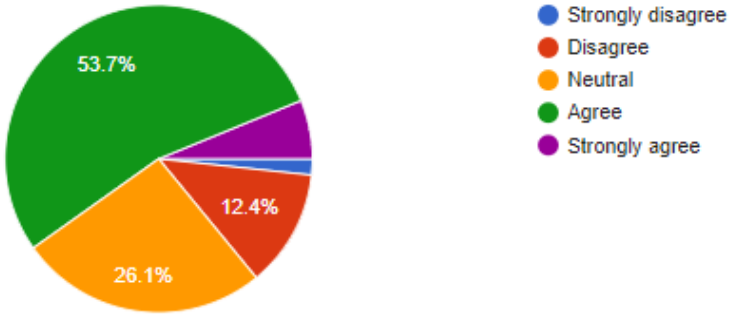
As I am aware, there were not any alternative job opportunities provided by the organization for the trainer after the 100% project handover

356 responses



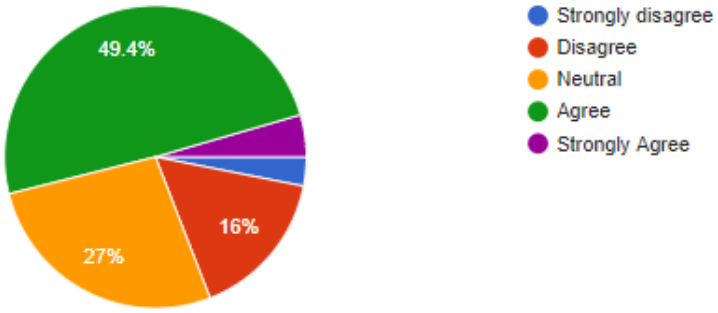
Before participating to the KT program, I was not fully aware about the KT process (Ex: - Stages like quality gates, shadowing process, war gaming stage etc.)

356 responses



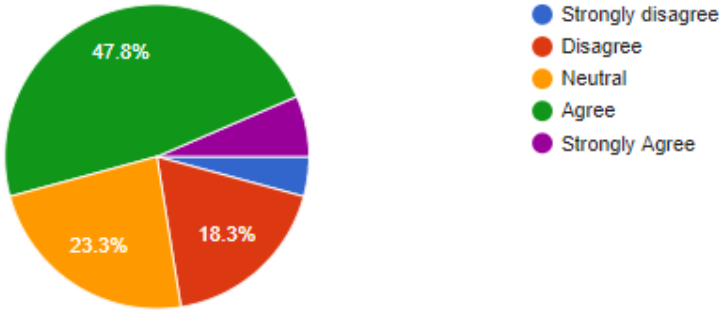
Management of my organization did not provide heads-up of the KT process before starting the actual knowledge transfer

356 responses



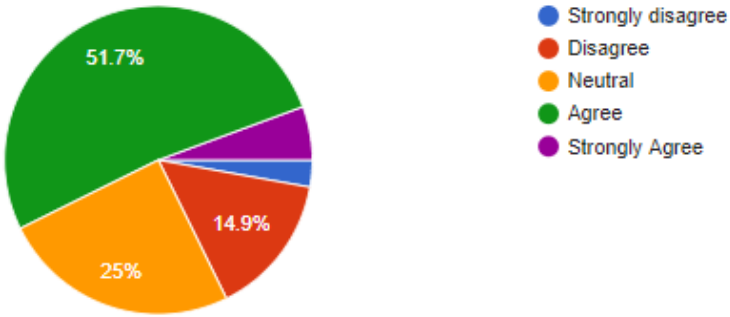
I feel that my organization did not validate my technical skills with the required skills for the project when I was recruited for the project

356 responses



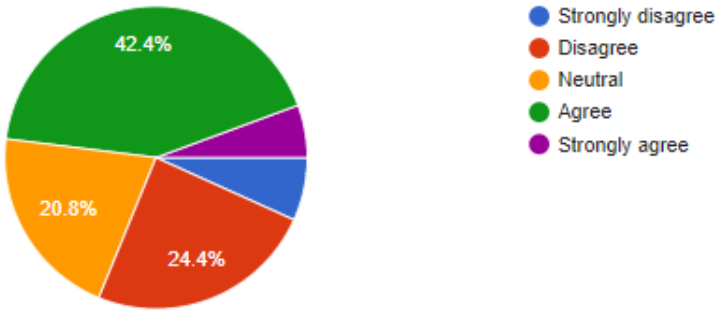
Majority of my team members were unable to manage their individual tasks without seeking technical aid from others

356 responses



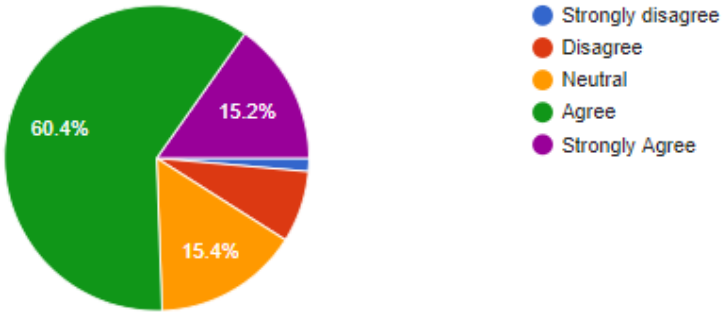
I did not have enough technical skills to contribute to the project

356 responses



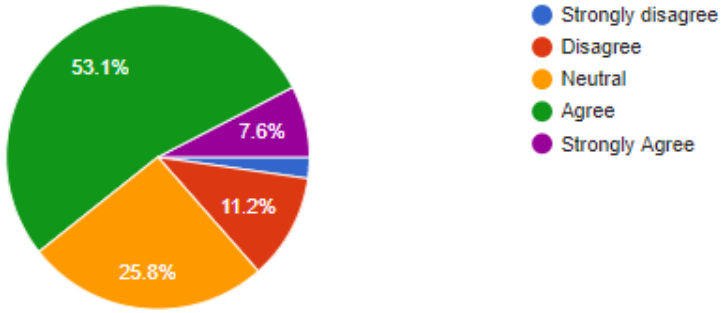
I believe having technical certifications can improve the productivity of IT support individuals

356 responses



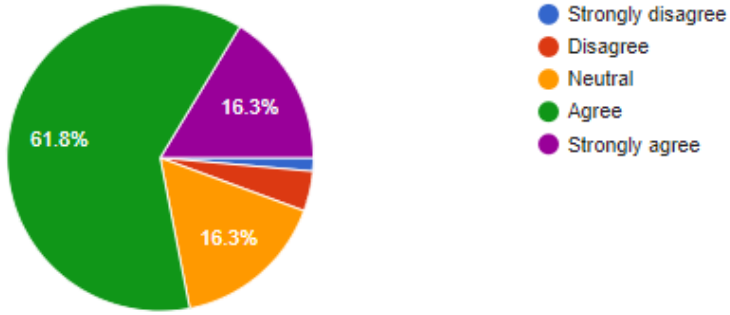
I believe management of my organization did not know well enough the technical skills of each employee

356 responses



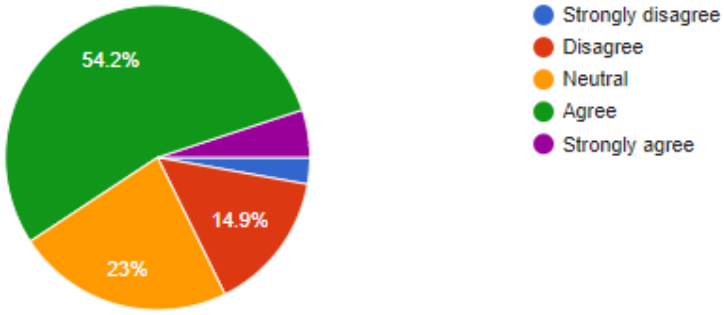
I feel that I have not received enough aid from my organization to improve my technological competencies

356 responses



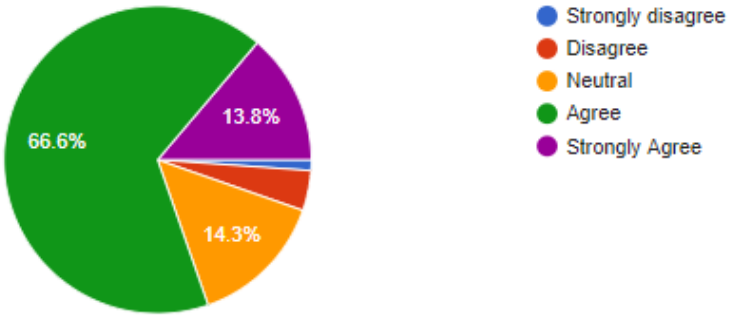
I believe leadership in my project did not have the capability to handle the cultural difference between onshore and offshore to fill the gaps

356 responses



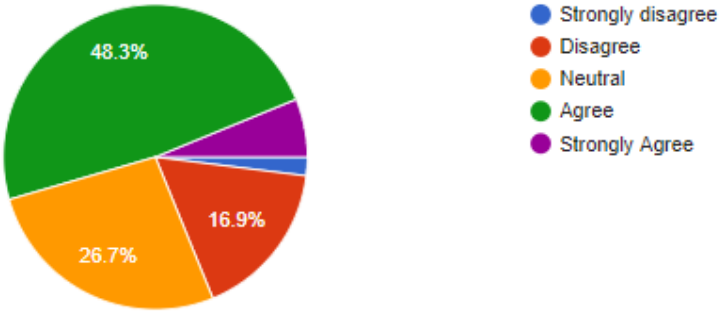
I believe close offshore-onshore collaboration is highly dependent on the leadership of the project

356 responses



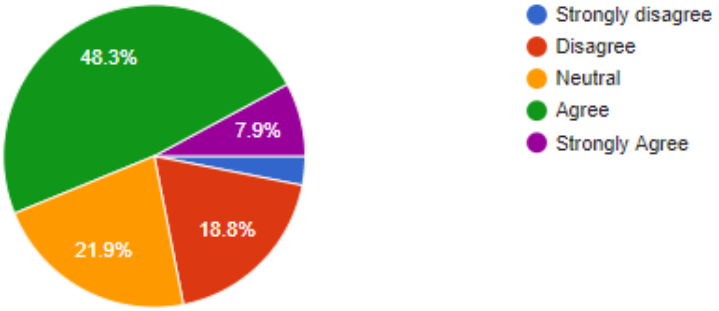
I feel that my leadership did not take correct decisions at the correct time

356 responses



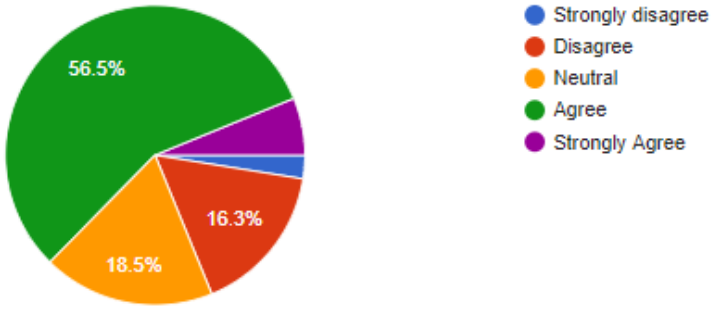
I feel my leadership did not have a clear picture of the entire project and the offshore outsourcing process

356 responses



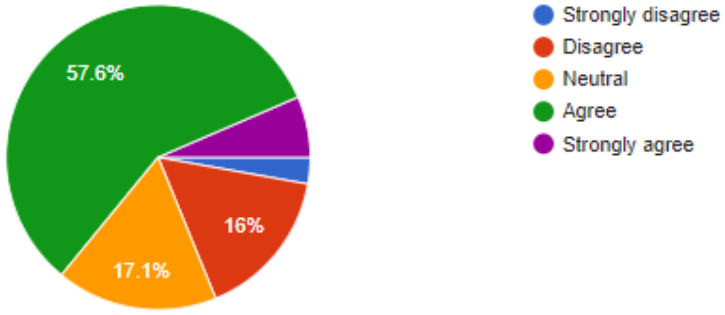
I was not aware about the major security polices of both of my onshore and offshore organization situated regions

356 responses



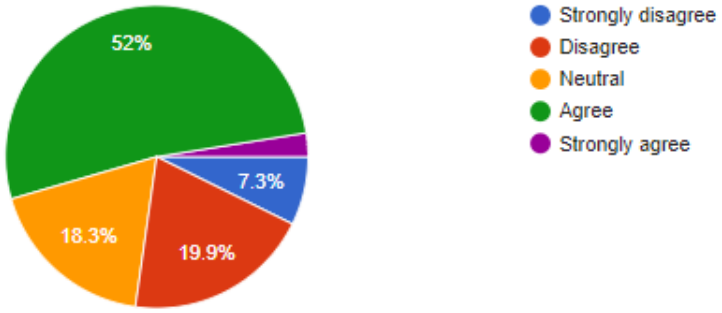
I have not carefully studied the legal agreements between myself and organization before entering the offshore support project

356 responses



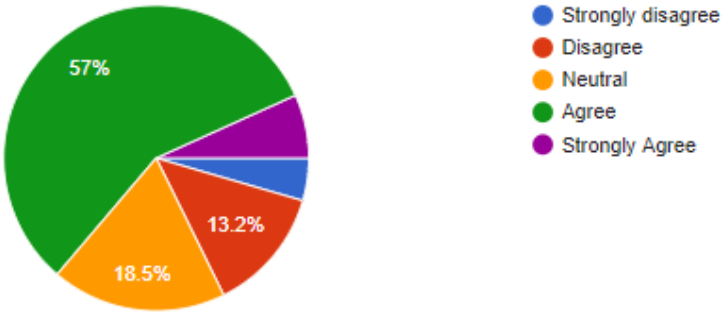
I did not have a clear understanding about the privacy of the production data which I was handling with

356 responses



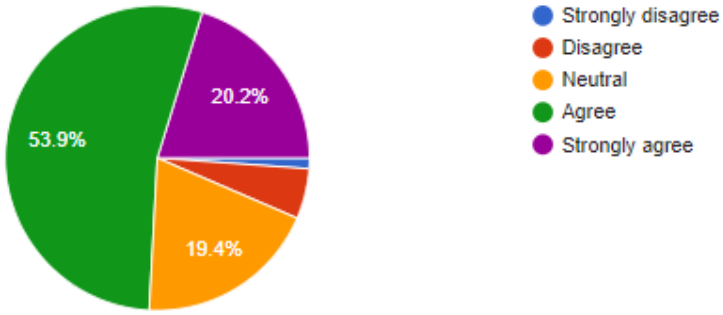
I have experienced or seen information security breaches within my project which were occurred by mistake or unethical manner

356 responses



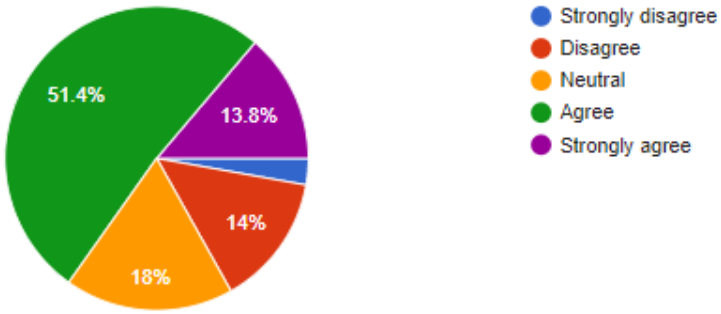
Me and my team had to spend more time in the project transition phase than estimated at the beginning

356 responses



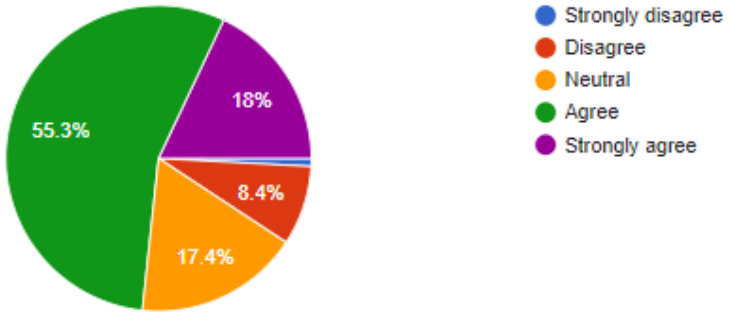
I did not receive extra compensation benefits within the project transition phase although I performed well

356 responses



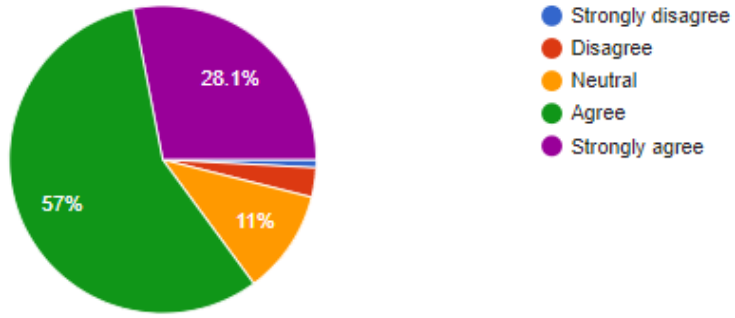
Although onshore organization was earning high profit margins, those benefits were not shared between offshore employees

356 responses



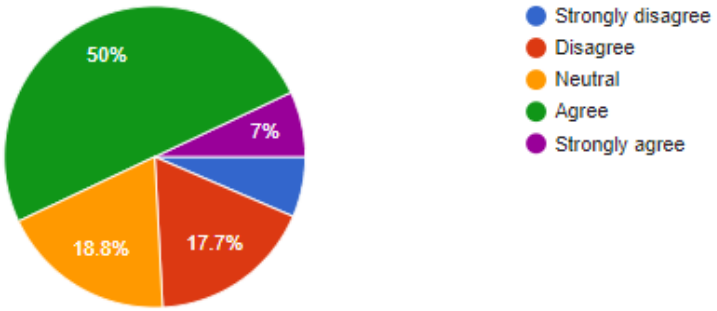
My management push us towards cost reduction (reduce unnecessary calls to onshore etc.) and there were cost cuts directly impacting me (Ex: - cutting of shift allowance, transport allowance).

356 responses



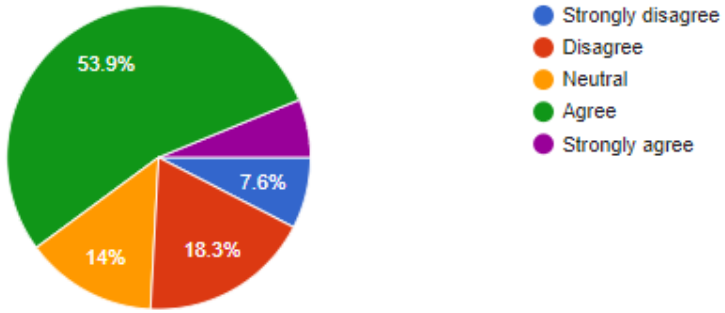
I could not clearly communicate with client-side senior stake holders due to my poor language skills

356 responses



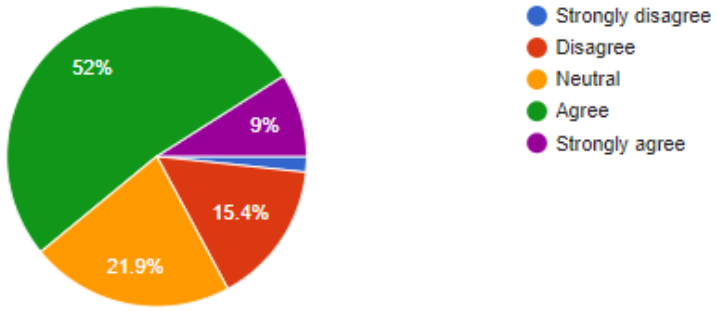
When I was facing an issue which I was unable to solve, I hesitated to communicate with onshore and seek for help due to my communication issues

356 responses



My management did not take necessary action to reduce communication gaps between onshore and offshore (Ex: - Deploying team members to onshore etc.)

356 responses



Most of the time, I was unable to speak politely and maintain professionalism with clients and senior stake holders in stressful situations

356 responses