An-Najah National University

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Service Delivery Process Improvements for IT-based Organizations

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DEDICATION

I would like to thank all who supported me for each step of the way

I dedicate this humble work especially to:

The soul of my father who was my Wiseman and for my mother who always pray for me

My beloved wife who has given me an exceptional support and encouragement through my way to bring this work to light

To my daughters Leen, Zeinah, and Ward

My friends and fellows

To everyone who provided any help or support to me.

To you all I dedicate my love and gratitude and the outcome of my work

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Qutaybah Adel Khwayrah

الإقرار

أنا الموقع أدناه مقدم الرسالة التي تحمل العنوان:

Service Delivery Process Improvements for IT-based Organizations

اقر بأن ما اشتملت عليه هذه الرسالة إنما نتاج جهدي الخاص, باستثناء ما تمت الإشارة إليه حيثما ورد, و أن هذه الرسالة ككل, أو أي جزء منها لم يقدم من قبل لنيل أية درجة علمية أو بحث علمي أو بحثي لدى أية مؤسسة تعليمية أو بحثية أخرى.

Declaration

The work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

Students name **اسم الطالب:**

Signatur : **التوقيع :**

Date: **التاريخ:**

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ABBREVIATIONS

CI	Configuration Item
CM	Capacity Management
CMS	Configuration Management System
COBIT	Control Objectives for Information and related Technology
CR	Change Request
CSI	Continual Service Improvement
eSCM-SP	eSourcing Capability Model for Service Providers
eTOM	Enhanced Telecomm Operation Map
GDP	Gross Domestic Product
ISO	International Organization for Standardization
ISO/IEC	International Organization for Standardization/International Electrotechnical Commission
IT	Information Technology
ICT	Information and Communication Technology
ITIL	Information Technology Infrastructure Library
ITS-CMM	IT Service Capability and Maturity Model
itSMF	IT Service Management Forum
KPI	Key Performance Indicator
MoE&HE	Palestinian Ministry of Education and Higher Education
MTIT	Ministry of Telecommunication and Information Technology
NGO	Nongovernmental Organization
NGOSS	New Generation Operations Systems and Software
PAT	Professional Acceptance Test
PCBS	Palestinian Central Bureau of Statistics
PDM	Project and Demand Management
PITA	Palestinian Information Technology Association
PITSDF	Palestinian Information Technology Service Delivery Framework
PMBoK	Project Management Body of Knowledge
QA	Quality Assurance

QC	Quality Control
RFC	Request For Change
SD	Service Design
SDP	Service Design Package
SKMS	Service Knowledge Management System
SLA	Service Level Agreement
SLM	Service Level Management
SLP	Service Level Package
SO	Service Operation
SS	Service Strategy
ST	Service Transition
SWOT	Strength, Weaknesses, Opportunities, and threats
UAT	User Acceptance Test
USAID	United States Agency for International Development

Service Delivery Process Improvements for IT-based Organizations

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Abstract

Palestine is directly affected by global trends of technological advances and revolution of information technology. As a result, the concept of IT-based services becomes clear in several service sectors like banking, stock exchange, telecommunications, and internet services. This research is an ambitious initiative that addresses the problems of Palestinians IT service delivery with the goal for more organized and streamlined IT service delivery. This research aims at organizing, and governing Palestinian IT service management by building a framework that is based on ITIL international framework. The framework was built with the principles of keeping it simplified, cost effective, and the most important thing is that framework fits Palestinian IT organizations. To understand and analyze the problems of Palestinian IT services delivery, the researcher adopted mixed method (qualitative and quantitative) approach so that focus group was used to understand the problem qualitatively, and based on findings; a survey was conducted to pull the opinion of IT community quantitatively. The researcher reverts back to qualitative approach and conducted several semi-structured interviews with IT seniors to validate findings of the survey.

Based on analyses of mixed method approach and literature review, the researcher addressed the major problems of IT service delivery here in Palestine. It was obvious that no clear alignment between business strategy and IT service strategy for IT organizations, at the same time, no clear end-to-end service delivery process, unclear requirements, weakness of testing methodology, unclear phases for product or service development, and requirements collection methodology should be more efficient and effective. Results of focus group, survey, and semi-structured interviews are almost aligned which indicate that the addressed problems almost exist. To treat the problems of Palestinian IT organizations service delivery that clarified throughout this research, the researcher based on literature review and data analysis findings has built Palestinian IT Service Delivery Framework (PITSDF) that has taken into consideration current problems of IT service delivery in Palestine. The framework is based on well known international framework; ITIL. PITSDF framework aims to provide Palestinian IT organizations with a simplified IT service delivery framework that is cost effective and easy implement and at the same time fits Palestinian IT organizations needs in term of providing systematic process follow for IT service delivery throughout service lifecycle. PITSDF is consisted of five key service areas; these are service strategy, design, transition, operation, and finally continual service improvements. At the end, this research has opened the door for other initiatives and endeavors to pursue in developing and improving IT service delivery in Palestine.

Chapter 1

1. Introduction

1.1. Overview

There are no doubts that direction toward services is increasing rapidly nowadays, so focusing on service delivery is becoming crucial factor for organizations that want to save and make more financial advantage especially those using information technology as a tool to deliver services such as internet service providers (ISPs), telecommunication companies, business solutions, and value added services providers. Service delivery quality is a key factor that will affect customer experience and satisfaction, this satisfaction might be technological, provided support, quality of service, price, etc. Palestine is directly affected by global trends of technological advances and revolution of information technology, as a result; the concept of IT-based services becomes clear in several service sectors like banking, stock exchange, telecommunications, and internet services as clarified by PCBS (2008). At the same time; it's also noted that Palestinian end user who consumes such services becomes more educated and aware about information technology tools like computer and internet as clarified by statistics of PCBS (2011). From this point it's so important to look at IT sector as a vital sector and pay attention to its way in delivering IT-based services across the service lifecycle and address the major strength, weakness, opportunities, and threats continuously and put the proper regulations, process and frameworks that enhance its way in

delivering IT-based service. This research is one of the endeavors that researcher hope to help in enhancing Palestinian IT sector.

1.2. Research Problem

Many governmental and non governmental bodies around the globe have launched initiatives to organize, govern, control, and enhance the way of delivering IT-based services, these initiatives also aim to respond to dramatic changes in IT domain and hence put the proper frameworks to streamline IT service delivery process that help in meeting IT key performance indicators(KPIs) at all levels. Here in Palestine, Information Technology sector is relatively new with respect to other local sectors and with other international ICT sectors, so initiatives to advance, govern, organize, control, and enhance IT service delivery still challenging and need attention of local bodies like IT key player. Despite of dramatic development of this sector especially in the last decade, still there is no evidence that ICT companies adopt clear frameworks for IT service delivery according to survey conducted by researcher "Service Delivery Process Improvements For IT-based Organizations" (2012).This research will investigate the local ICT companies to find out their ways that are used to streamline service delivery process either standardized one or customized and address major constrains that affect service delivery then put a simplified framework that fits their attributes and characteristics so that overall service delivery process will be enhanced and consequently improving IT Key performance indicators (KPIs).

The need to review IT service delivery process is due to the following facts:

- ICT companies in Palestine are new with relative to other developing counties and third world companies.
- Difficulties to adopt international standards because of absence of local implementers.
- Cost associated with implementing such frameworks such as required resource, consultancy, and conduct required training.
- Absence of effective regulations that govern IT sector.
- The awareness and trend toward services is increasing in the region, nowadays we have more educated customers who will look closely about service quality.

Because of these factors, it's necessary to put framework that can treat these factors and at the same time easy to implement and cost effective.

1.3. Research Questions

To achieve its objectives, the research has put the following major questions that will help to identify factors improve IT service delivery in Palestine

- What is the adopted IT service delivery framework in Palestinian IT firms
- What is the factors that affect IT services delivery in Palestine
- What is the best IT management framework that fit them

1.4. Research objectives

As mentioned earlier in this chapter that world trends toward services and the rapid growth in information technology produced a new market trends and customers. In this context; it has been seen here in Palestine- as party that directly affected by global trends - that trend toward services is growing day by day, to state only a few, the usage of mobile services such as voice, data, SMS, and multimedia services as well as internet access are notably increasing, for example more than 35% of Palestinian population is using internet and mobile services according to PCBS (2011) house hold survey. Revolution and rapid development in IT produces services that might not be mature enough to be introduced to the market, and hence, service instability and immaturity might be noticed through increasing customer complaints, that will lead to customer dissatisfaction, negative impact on organization public image, and eventually leads to incurred losses on both organization and customer. This research will address the major problems related to IT service delivery processes since it's the most interactive processes with customers and the most effective one that will change customer behavior and satisfaction, it will mainly study and review this process from the following aspects.

- Reviewing service delivery approaches and models in the Palestinian IT firms and services providers and address the major problems, like problems associated with:
    - Service Strategy and alignment with business strategies

  - Service requirements ,design, and implementation processes
  - Service level quality, and availability , and continual improvement
  - Service support, availability and reliability and factors that affect them.
  - Customers needs and how the service delivery meets customer expectation.
- Proposing framework for service delivery processes across the service life cycle that based on customized international frameworks to fit Palestinian IT firms.
- Establishing set of recommendations and guide lines that will help local IT firms to enhance service delivery process.

1.5. Research Importance

The importance if this research is derived from the importance of information technology in general and in specific the importance IT sector that is growing rapidly nowadays globally and locally. This sector needs to be organized, governed, and controlled, and to be customer-focused so that IT key performance indicators (KPIs) can be met along with other KPIs like customer satisfaction, from this point; this research will help to:

- Address local IT firms in term if IT service delivery and address, the Strength, Weaknesses, opportunities, and threat that will affect them in term of IT service delivery and management.

- Enhance service delivery process by proposing simplified framework that fit Palestinian IT-sector.
- Enhance customer satisfaction by streamlining service delivery process across the service lifecycle.
- Optimize IT quality and reduces associated cost by eliminating non value added components across the service lifecycle.
- It will be a good milestone and reference for other future initiative and studies that are related IT service management

1.6. Contribution to Business

This research along with its deliverables provides high value to business because it addresses IT service delivery here in Palestine and factors that affect it either external or internal along with root courses and recommendation for enhancements. Also the research provides IT community with customized IT service delivery framework that based on international framework ITIL with modification to fit Palestinian IT companies. Finally the research has opened the door for other initiatives and endeavors to pursue in developing and improving IT service delivery in Palestine.

1.7. Thesis Structure

Nowadays IT becomes an independent industry, and it's not just a tool for enabling other business domains, most of businesses around the globe relay on IT services to deliver modern, quick, and high quality products, from

this point this research comes as an endeavor to enhance IT service delivery process. This thesis is comprised of seven chapters; each one provides important information and guidelines in the way of enhancing IT services. Chapter one introduces reader to the main topics of this thesis, and draw attention to research problem that research aims to solve, research objectives and importance, and how this research will help in enhancing service delivery process for IT-based organizations.

Chapter two includes an overview of ICT in Palestine, with some important statistics that are based on information from Palestine Central Bureau of Statistics (PCBS), it also includes Palestinian ICT key player, and competitive advantages of Palestinian ICT sector along with strength, weakness, opportunities, and threats of this vital sector.

In chapter three; the research provides reader with a comprehensive literature review for management frameworks and their benefits to IT along with the main objectives of these frameworks, it also provides reader with concepts of IT quality and continuous improvements, and finally it discusses ITIL formwork deeply since it will be the backbone for proposed IT service delivery framework.

Chapter four provides an overview of methodological approach that has been adopted by researcher to investigate the current IT service delivery process in Palestinian IT-based organizations, which is a mix of qualitative

and quantitative methods, where focus group and semi-structured interviews were used as qualitative and survey as quantitative methods.

Chapter five provides details for data collection and analysis; it shows details for focus group, survey, and interviews findings, it also shows the summary of addressed problems from those three different sources.

Chapter six shows in details the proposed Palestinian IT service delivery framework (PITSDF), it shows how this framework provides a solution for most of IT service delivery problems that have been identified during data collection and analysis phase. This chapter also clarifies in details all components of Palestinian IT Service Delivery Framework (PITSDF).

Chapter seven includes conclusion about all milestones of this research, in addition to that, it shows a set of recommendations for IT key players and decision makers that will help IT organization to enhance IT service delivery in Palestine.

Chapter 2

2. Overview of ICT in Palestine

2.1. Introduction

There are no doubts that information technology is developing rapidly nowadays, this revolutionary development affects all markets globally and locally and shape the way of delivering information technology services to consumer. As part of this open market; its noted here in Palestine that ICT sector is increasing rapidly at all levels; enterprises and consumer, to state only a few, the percentage of families that use computers is 50.9% in 2011 according to PCBC (2011), "Household Survey on Information and Communications Technology (2011)".This is an indication about such development at the end user level; on the other hand it's also noted a significant development and growth at enterprise level especially after 1995 after Oslo agreement. According to PITA (2009), the biggest end-user of technology products and services was the PNA represented by all ministries followed closely by municipalities and then by the larger companies, especially utility companies such as the Jerusalem District Water and Electricity Companies. By 1997, the Palestinian telecommunication sector was 100% privatized with the creation of PALTEL, the Palestine Telecommunications Company. PALTEL installed a digital network connecting the West Bank and Gaza and currently offers a wide range of services such as standard fixed telephone lines, leased

lines, ISDN connections, ADSL, all of these services participated to develop ICT sector which includes telecommunication, software development, computer and networks, and internet services. With respect to ICT investment; the Palestinian ICT Cluster Assessment report17 estimated the Palestinian ICT market in 2005 at US$ 300 million. The same report estimated the size of the local market at US$ 120 million in 2000 dropping to US$ 87 million in 2003 and reaching US$ 250 million in 2007 according to PITA (2009), on the other hand; the statistics of PCBS (2008) show that the percentage of enterprises that use computer information technology was around 21.3% in 2007, and of course if the last 5 years, which witnessed massive development in using ICT is taken into consideration; the percentage will be higher than 21% .According to PCBS (2008) Business Survey on ICT, 21.3% of the total number of the enterprises in the Palestinian Territory used computers in the year 2007, also the survey data showed that the rate of ICT specialists employed by economic enterprises was 3.5 per 100 employees and 30.3% of the ICT specialists are computer programmers, 17.7% were computer engineers. The rates of electronics engineers and telecommunications engineers were 10.6% and 10.3%, respectively, of the total number of ICT specialists according to PCBS (2008).

Regarding ICT spending, PCBS (2008) survey findings showed that 62.4% of the total expenditures on ICT were spent on telecommunications, 9.9% on computers and computer maintenance, 8.2% on purchasing and

maintenance of electronic equipment and devices, and 6.1% was spent on the internet and networks, and their maintenance, development, and installation. Moreover, 3.8% of the total expenditures on ICT were spent on purchasing software programs; 0.7% was spent on training enterprise employees on technology and the use of technology; and 0.4% was spent on research and studies involving technology.

2.2. Palestinian ICT Key Players

For effective ICT sector, it's important for all Palestinian bodies that have the power and authority to consolidate efforts to develop this vital sector, among those bodies:

- Ministry of Telecom & IT (MTIT)

The governmental body that is responsible for information and telecommunication scoter in Palestine

- Ministry of Education and Higher Education (MoEaHE)

The governmental body that is responsible operating and developing education and higher education sector.

- Palestinian IT Association PITA

PITA represents the collective interest of the private IT sector in Palestine by advocating business-enabling policies, mechanisms, and environment through private-public partnerships

- Palestine Telecommunication Company PALTEL

Private sector company that provides land line and internet services

- Cellular companies; WATANIYA Mobile and JAWWAL

Private sector companies that provides mobile services in Palestine

- Palestine Chapter of the Internet (ISOC.PS)

Palestine Chapter of the Internet (ISOC.PS) is an NGO that aims to maintain and extend the development and availability of the Internet and its associated technologies and applications in Palestine

- Palestinian National Internet Naming Authority PNINA

The Palestinian National Internet Naming Authority (PNINA) is the Official domain registry for the Palestinian country code Top-Level-Domain (ccTLD).

- Palestine ICT Incubator PICTI

The Palestine Information and Communications Technology Incubator (PICTI) is an independent NOG that offer professional business services to Palestinian entrepreneurs who have mature concepts for unique and innovative ICT products assessed to have strong market potential.

- Universities (excellence centers)

Like Korean Palestinian IT Institute of Excellence (KPITIE), and Hasib Sabbagh IT Center of Excellence.

2.3. Palestinian ICT Competitive Advantage

The Palestinian ICT sector has been growing rapidly since 1994 (after Oslo agreement) in parallel to the growth in other economic sectors and increased demand for their services. According to PITA (2009) report ,"The Palestinian ICT Sector, "*A Three-Year Outlook…Based on Economic Indicators*", the spillover effect of the ICT sector to other industries has led to the creation of technological and information management solutions needed to improve these industries resulting in increased value added and therefore increased contribution to Gross Domestic Product (GDP) as clarified in the below figure, these include the use of telecommunications capabilities and internet, outsourcing to regional and global markets, especially in software development

According to PITA (2009), the main competitive advantages of the Palestinian ICT sector can be summarized as follows:

- Abundance of ICT graduates (8.5 % according to MoE&HE)
- Highly trained labor Force
- Diversity of ICT specializations (SW languages, networking , servers
- Low labor cost (with relative to other markets).
- Wide range of ICT companies specialization (content, services, HW, SW, consultation).

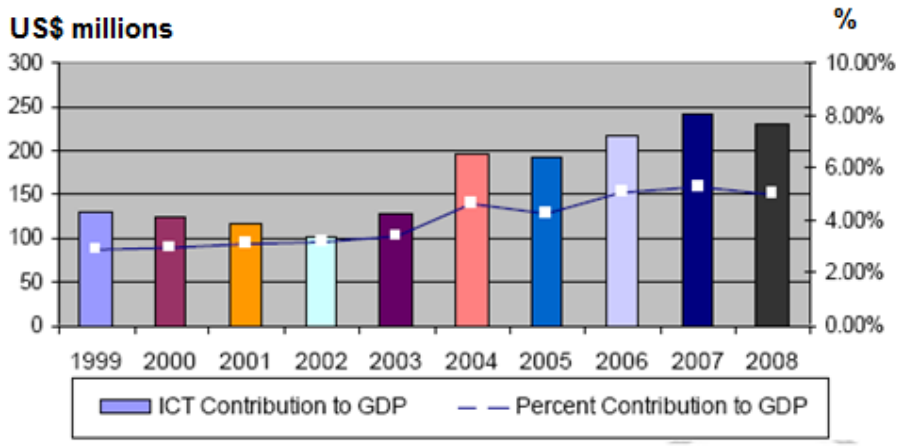


Figure 2.1 : ICT Contribution to GDP from 1999-2008, Source:PITA (2009)

2.4. Palestinian ICT Sector SWOT Analysis

According to findings of study coonducted by PITA (2009) and funded by USAID about ICT sectore in palestine, the followig key factors were identified in term of pleastinan ICT strengh, weanesses, opprtunities, and threaths, below is a set of major factors that affect Palestinan ICT sector as have been seen by researcher.

Table 2.1: Palestinian ICT SWOT Analysis , Source: PITA (2009)

Strengths	Opportunities
▪ Development assistance from US and EU with real interest in change, through adoption and funding ICT projects ▪ The Positive growth rate despite the political situation which represent Palestinian case in adaptation ▪ Pool of proven ICT products and services supported by experienced human resource – but often local and therefore limited ability to sell beyond the region, ▪ Advanced and accessible basic telecom infrastructure including ADSL, ISDN and leased lines which enable IT services and other related deliverables to be delivered easily.	▪ availability of skilled and trained workforce as indicated earlier in this chapter ▪ Significant donor projects can help jumpstart industry if proper policy is there.
Weaknesses	**Threats**
▪ International perception of development and security toward the region which primarily limit IT services outsourcing to outside world ▪ Lack of investment in IT sector due to region instability and other political conditions.	▪ Political conflict which lead to immigrate investment to other stable regions, ▪ Commoditization as the Palestinian firms are competing for the same services which are increasingly becoming generic and standardized ▪ ICT brain drain to outside.

All above motioned factors shape directly and indirectly the way of Palestinian ICT sector stability and hence the quality of delivered product or services. The study that conducted by PITA (2009) is appreciated initiative that needs other supporting studies to investigate deeply ICT needs, constrains, opportunities, and future of Palestinian ICT sector as an independent industrial one.

2.5. Palestinian ICT Challenges

Since establishing Palestinian National Authority (PNA), ICT sector has been developed dramatically despite of occupation policies that limit such development at all levels starting from ICT import polices, up to technology implementation and operations. According PALTRADE(2010) ICT sector still facing many challenges as mentioned below.

2.5.1. Legal Challenges

Legal challenges represent issues related to technology ownership like frequency spectrum to operate 3G services in PNA areas, illegal operator of Israeli Mobile Operators (IMO) in PNA areas, these challenges should be addressed by both side Israeli and Palestinian to resolve all related pending issues in this regard

2.5.2. Landline Bandwidth Challenges

In PNA area there is one landline provider “PalTel”, and faces many constrains starting from investment up to operation in C areas, these

definitely limit spread of broadband technologies so government should put policies to free ICT market and encourage investors in this regard along with solving the problem of building network in C areas.

2.5.3. Wireless Technology Challenges

This represent the most important challenge that should be addressed deeply because of most countries had licensed WiMaX, and 3G services, however this related also to legal challenges stated earlier in this section

2.5.4. Mobile Operator Challenges

There are two mobile operators in Palestine, Wataniya and Jawwal, and both of them are facing the same challenges related to refusal of Israeli side to release additional frequencies to accommodate normal growth subscriber base and refusal to release frequencies concerning 3G-advance network from one side and allow those operators to establish mobile stations in Area C which have lead to a major loss of market opportunity.

2.5.5. Software Development Challenges

According to PITA, there are around 20 large general software development firms in Palestine that develop software and export regionally and internationally. The major challenge for software development firms is inability to access advanced wireless broadband technology such as 3G and WiMAX could limit their ability to compete both locally and internationally.

2.6. Chapter Summary

The revolutionary development in IT affects all markets globally and locally and shape the way of delivering IT services to consumer, this dramatic development affects also Palestinian ICT sector at all levels; enterprises and consumer, so key ICT player in Palestine should pay more attention for development and governance of this vital sector first by addressing major strengths, weaknesses, opportunities, and threat, then put the proper plans that will develop this vital sector. Palestinian ICT sector has strong competitive advantages like abundance of ICT graduates, highly trained labor force, diversity of ICT specializations, and low labor cost, if these competitive advantages have been employed properly, then for sure this will enhance overall performance of this vital sector.

Chapter 3

3. Literature Review

3.1. Overview

In the previous chapter, the researcher introduced reader to Palestinian ICT sector, its strengths and weaknesses, in addition to opportunities and threats; it also highlighted the major ICT key players who have the authority and power to develop this sector. This chapter will introduce reader to the main IT frameworks that help to organize, govern, and develop ICT-based organizations, it will also discuss management frameworks in general and IT related in specific, and shows their objectives, advantages, models, and many other important aspects.

3.2. Service and Service Management Concepts

IT service delivery refers to the activities performed by IT staff to provide applications, technology and support to IT customers either internal or external customers according to Wheatcroft (2007).

To understand service delivery, it's important to understand the meaning of service and service management:

According to Cartlidge (2007), "*A service is a means of delivering value to customers by facilitating outcomes customers want to achieve without the ownership of specific costs and risks"*

According to Stucki (2004) "*A service is an essentially intangible set of benefits provided by one party to another party* ".

According to OGC (2007) "*Service Management is a set of specialized organizational capabilities for providing value to customers in the form of services"*.

According to ITIL *"Service management is concerned with more than just delivering services. Each service, process or infrastructure component has a lifecycle, and service management considers the entire lifecycle from strategy through design and transition to operation and continual improvement ,* Cartlidge (2007).

3.3. Business and IT Strategy Alignment

The is no doubt that IT has become a critical tool for Service delivery in all business domains, so alignment of IT Strategy with business strategy is mandatory nowadays to optimize service delivery, mitigate risk, and reduces operation cost. Without tight integration of the strategic and planning of IT and the rest of the organization, a business risks costly IT failures and a steady decline in competitive ability. According to Tallon(2008) Strategic Alignment is defined as the interaction or fit between IT and business strategy. According to Rathnam (2005); the gap exists between IT and business because of:

- Poor strategy development, management, and communication
- Lack of strategic focus within organizations - focus on budget, tactical plans, and governance rather than strategic direction of the enterprise.
- No strategy management process in place

- Business areas unwilling to include IT in strategy discussions in most cases.
- IT investments are not linked to corporate strategy in most cases

According to Tallon(2008); the following guidelines help to minimize business strategy and IT strategy alignment gaps:

- CIO builds focus on strategy.
- Build a strategy-focused leadership team
- Involve IT executives in planning, implementation, and resolution of business issues.
- Create an integrated management process to align IT strategy with business strategy
- Manage IT as an asset rather than as an expense
- Include business departments in reviews of IT performance
- Survey business departments to evaluate IT value, development and execution of strategy.
- Build trust between IT executives and business executives.
- Ensure strong governance of IT and business resources.
- Reward IT staff based on how well the business does.
- Conduct strategy alignment review for all new IT initiatives.
- Build recognition that technology is at the center of strategic opportunity.
- Ensure IT staff and leadership understands business objectives.

- Physically relocate IT executives to business units to lean the business.

3.4. Management Frameworks at a Glance

In today's business world, where revolution in information technology plays a vital role in providing competitive and differentiated services, it's not an exaggeration if someone says that IT service management is the most important process that shapes the nature of delivering such competitive services, from this point, it's important for any organization that needs to adapt with such competing environment to focus on IT functions and its processes. Developing, adopting, and customizing IT processes are common practices in most of successful organizations, but unfortunately budget limitations, lack of awareness, and cost are the major constrains that affect IT services delivery.

IT service management addresses the overall service or product lifecycle starting from service or product strategy -that should be aligned with business strategy- , up to service design, implementation, and operations, all of them participate in delivering successful product or services that fulfill organization and customer's needs.

According to Slem (2008), it should be noted that in overall service delivery lifecycle; the operation phase represents the majority of expenditures, the operating budget, staff cost, and ongoing cost associated with maintaining the information system, represent the largest portion of IT

spending which is around 70%, the remaining 30% is spent on product development.

Many frameworks published from several bodies worldwide that can be used for managing different domains including IT. However, some frameworks only cover specific aspects of IT such as service delivery, security, management of risk, procurement, project management, ...etc, unfortunately there is no one-size fits all. This section clarifies the main categories of management frameworks along with examples

3.4.1. Quality Management Frameworks

Frameworks that concentrate on quality standards which can be applied in specific IT area such as service delivery, development, security, like TQM, ISO9000, ISO/IEC20000

3.4.2. Quality Improvement Frameworks

Frameworks that concentrate on IT processes improvements such as ITS-CMM, Six-Sigma, eSCM-SP, and IT balanced scorecards.

3.4.3. IT Governance Frameworks

Frameworks that concentrate of how to organize and control IT functions and identify key responsibilities, organization and organizational structure along with control IT functions like CoBIT and ITIL.

3.4.4. Information Management Frameworks

Frameworks that concentrate on how to organize IT functions in term of IT service delivery, requirements collections and processing, procurements, etc which is the main topic of this research like eTOM, ITIL, ASL , …etc.

3.4.5. Project Management Frameworks

Frameworks that concentrate on project management processes in general and not specific for IT like PMBoK and PRINCE2

3.5. Management Frameworks Benefits for IT Organization

- The IT develops clearer structure, becomes more efficient, and more focused on corporate objectives as Slem (2008) clarified
- Efficient control of delivered services, any change becomes more easier
- Clear relationship between all participated parties like other business units and external supplier or customers.
- The effective process structure provides framework for effective outsourcings of element of IT services as Slem (2008) clarified
- Better service quality for delivered products or services
- Better man power optimization through process optimization and standardization.

IT Service Level Agreement (SLA)

SLA represents an understanding of minimum level of IT service quality that customer expect to receive from IT department. The understanding

may be formally documented by SLA document or may be informally, the quality may be expressed in service availability, response time to required changes, lead time, service restoration time , …etc, according to Tricker (2006).

3.6. IT Service Quality

Like other domains; IT needs quality principals and quality management approaches to deliver IT services efficiently according to specifications and business needs, it's no wonder when seeing concepts of quality management and total quality management (TQM) are applied in this domain. Many IT frameworks and standards, but most of them dedicate considerable part to IT quality management that are aligned with most popular quality approaches like ISO9000 and Six Sigma.

Before going inside IT quality, it's useful to have a look at the definition of quality.

- ISO 9000 state: "*We can speak of quality when all those features of a product or service which are required by customer are being delivered to customer".*
- Quality is a "*Degree of Excellence*" according to Merriam Webster.
- Quality is "*totality of features and characteristics that satisfy needs without deficiencies*" according to American Society for Quality.

3.6.1. Deming Cycle

According to Slem (2008), Dr. William Deming introduced an iterative four-step management method used in business for the control and continuous improvement of processes and products, shortly called the PDCA cycle for Quality Improvement, as clarified by Slem (2008). PDCA is based on the following:

- Plan: Put the objectives and processes to deliver results in accordance with the expected output, plan what should be done and when it should be done, and who should be doing, how it should be done, and by using what.
- Do: Implement the plan, execute the processes, make the service as requested
- Check: investigate if the executed activities and plans provide the expected results.
- Act: make corrective actions by modifying, adjusting, and fixing, any non-compliant activity derived from check phase.

The following diagram illustrates Diming Cycle:

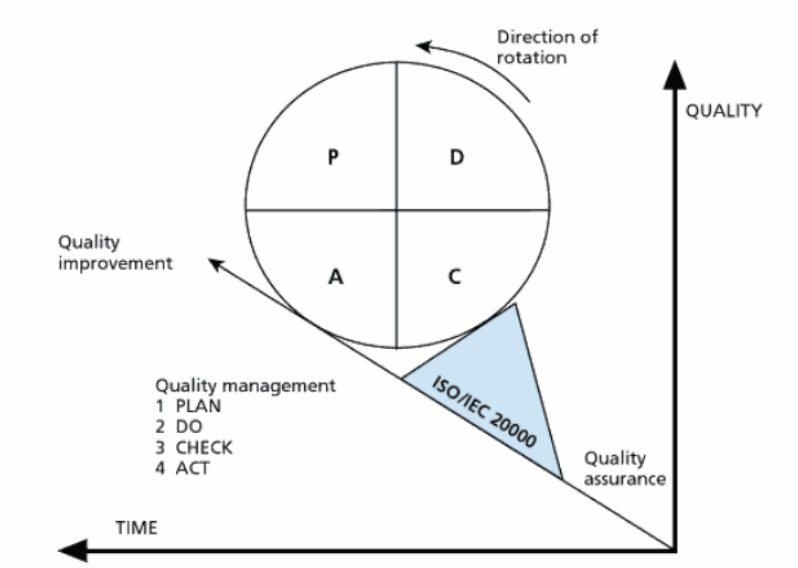


Figure 3.1: Deming Cycle, Source Slem (2008)

3.7. ISO9000 Quality Management System

According to Tricker (2006), ISO 9000 has put eight principles for quality, these principles have been identified to facilitate the achievement of quality objectives and form the foundation for effective quality management, below is a description of these principles as they are currently defined in ISO 9000.

- **Customer Focus**

Organizations depend on their customers and therefore should understand current and future customer needs, should meet customer requirements and strive to exceed customer expectations. The key benefits include enhanced customer satisfaction, customer loyalty, increased revenue and market share

- **Leadership**

Leaders establish unity of purpose and direction of the organization. They should create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives. Key benefits includes better communication among all organizational level, better understanding of organization goal and objectives

- **Involvement of People**

People at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit. Key benefits include employee motivation, accountability, and stimulation

- **Process Approach**

A desired result is achieved more efficiently when activities and related resources are managed as a process. Key benefits include better resource utilization, cost reduction, systematic workflow and hence reduction of reworks and scraps.

- **System Approach to Management**

Identifying, understanding and managing inter-related processes as a system contributes to the organization effectiveness and efficiency in achieving its objectives. Key benefits include efficiency and effectiveness.

- **Continual Improvement**

Continual improvement of the organization's overall performance should be a permanent objective of the organization. Key benefits include sustainability and market presence, fast response to customer needs.

- **Factual Approach to Management**

Effective decisions are based on the analysis of data and information.

- **Mutually Beneficial Supplier Relationships**

An organization and its suppliers are interdependent and a mutually beneficial relationship enhances the ability of both to create value.

Figure 3.2: Eight quality management principles, ISO9000, Tricker (2006)

After well-known Quality Management System ISO9000 has been discussed, it's now a time to talk about IT frameworks and related quality management systems. For IT service department; quality management requires understanding the perspectives of business toward quality and design and implement services accordingly. The following section describes the well known IT service management standard and frameworks that initiated from several bodies around the globe with the main objectives to enhance IT service delivery and streamline IT processes and accordingly enhanced performance and better quality of service along with cost reduction.

3.8. IT Frameworks

3.8.1. ISO/IEC 20000

According to Slem (2008), ISO/IEC20000 is the first formal worldwide standard for IT service management, it was developed in 2005 to set out specifications for IT service management, the purpose of this standard is to enable organizations to effectively and efficiently deliver IT services that meet business needs, its mainly consists of two parts, part one is the specifications that enable organization to comply with ISO 20000 certification while part two is focusing on the implementation of part one. Part one promotes the adoption of an integrated process approach to effectively deliver managed services to meet the business and customer requirements. According to Slem (2008) ISO/IEC 20000 comprises of following sections:

- Scope and terms and definitions
- Planning and implementing service management
- Requirements for a management system
- Planning and implementing new or changed services
- Service delivery processes
- Relationship processes
- Control processes
- Resolution processes
- Release process.

ISO/IEC 2000 is applicable for all IT organizations and its independent of their structure; however, small organizations may find implementation more complex. Thus, other frameworks like ITIL maybe more appropriate for them. The following figure illiterates these sections

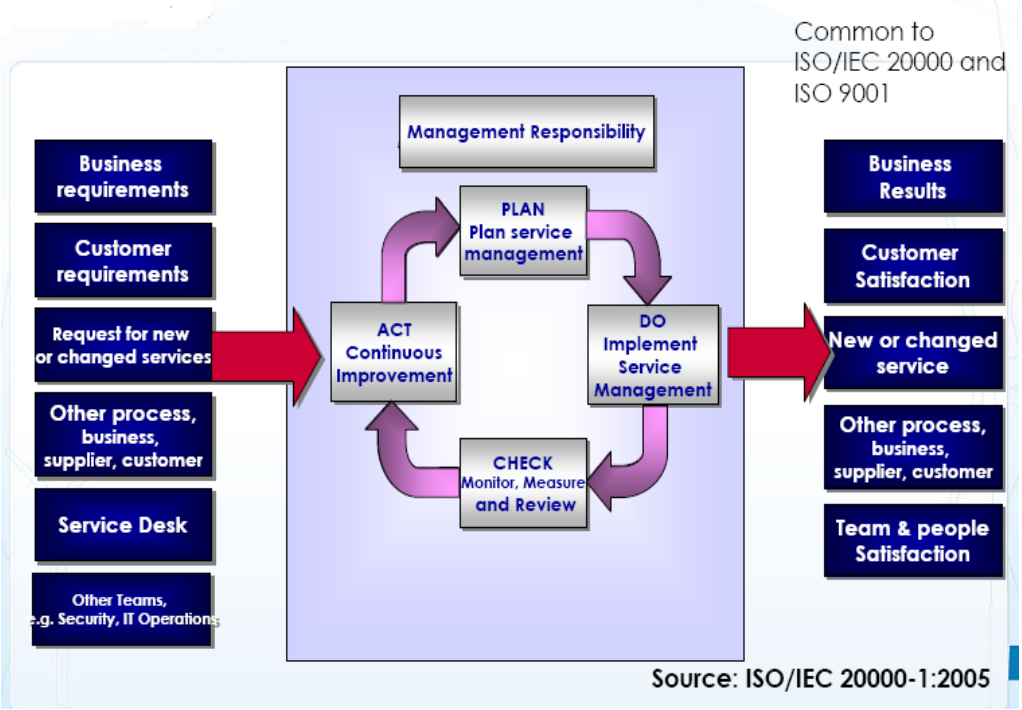


Figure3.3: ISO/IEC 2000 sections, Source itSMF (2006)

3.8.2. eSCM-SP:

According to Hyder (2010) eSCM-SP is a best practices capability model with three purposes: *"(1) to give service providers guidance that will help them improve their capability across the sourcing life-cycle, (2) to provide clients with an objective means of evaluating the capability of service providers, and (3) to offer service providers a standard to use when differentiating themselves from competitors*". eSCM-SP is managed by Information Technology Service Qualification Center (ITsqc) which is a multidisciplinary group of researchers and practitioners that addresses the needs of IT-enabled service providers and their clients.

3.8.3. University of California IT Service Delivery Model

University of California SANTA CRUZ (2003) has put a model for IT service delivery to optimize IT service delivery performance, this model primarily start from IT infrastructure and focus on client experience to deliver and improve IT services.

California University initiative was primarily published to serve the university itself and can't be used in general for all IT firms since it's deeply customized to achieve university's service delivery Key Performance indicators (KPIs).

3.8.4. eTOM Business Framework

According to Rozemeijer (2007), eTOM (Enhanced Telecom Operations Map), is a telecommunication service provider frameworks published by

the TM Forum in 1995, it defines the most widely used and accepted standard for business processes in the telecommunications industry. eTOM describes the full scope of business processes required by service provider and defines key elements and how they interact. It focuses on structure, process component, roles and responsibilities

eTOM has been adopted by ITU-T as a Recommendation and published in the M.3050.x series as being clarified in a white paper by Cisco Systems (2009).

eTOM Objectives

The main objective of eTOM is to standardize business processes for service providers specially telecommunication service providers like PalTel, Jawwal, and Wataniya Mobile. eTOM processes consist of three sections:

- Strategy, Infrastructure & Product (SIP) that covers planning and product /service lifecycle management
- Operations, that covers day to day operational routines
- Enterprise Management, which covers enterprise strategic planning, business support management, human resource management,

The eTOM model consists of four levels from zero to three (Level-0, Level-1, Level-2 and Level-3 processes. These levels form a hierarchy, each level contains a group of processes that have been showed in details in

the next level. The Level (0) span horizontally across an enterprise's internal organizations that clarify:

- Market, Product, and Customer
- Service: Product components developed by the enterprise
- Resource (Application, Computing, and Network)
- Supplier/Partner

The following diagram illustrate the first level (0) of eTOM framework

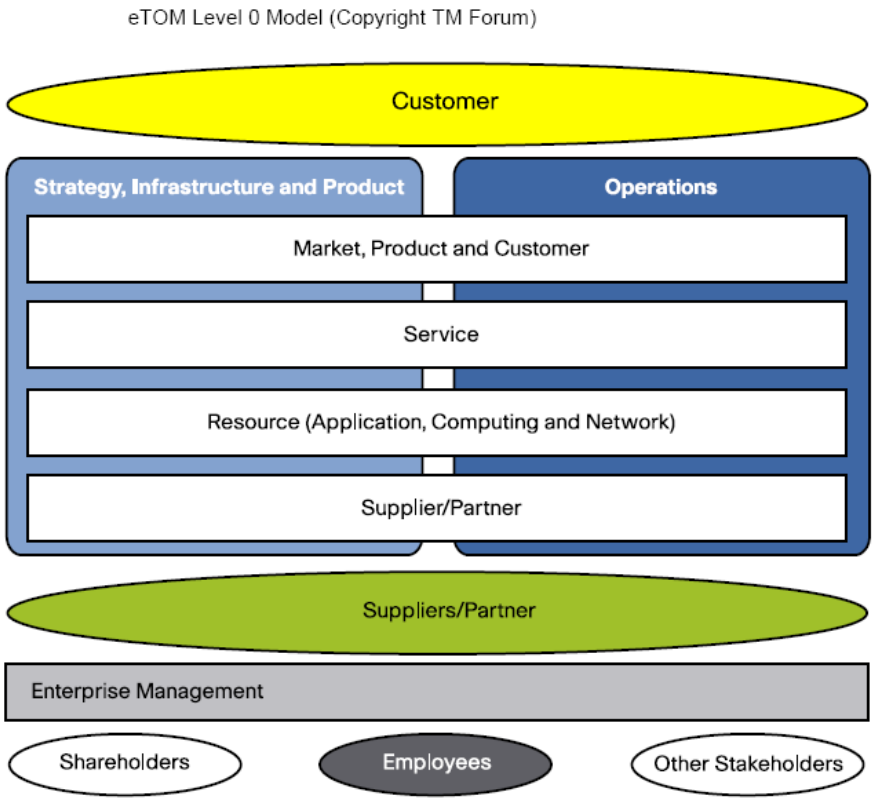


Figure 3.4: eTOM level 0, Source: Cisco systems (2009)

Level (1) of eTOM processes gives more details for level (0). The model shows seven vertical process groupings required supporting customers and

managing the business, the following diagram illustrates the second level (1) of eTOM framework

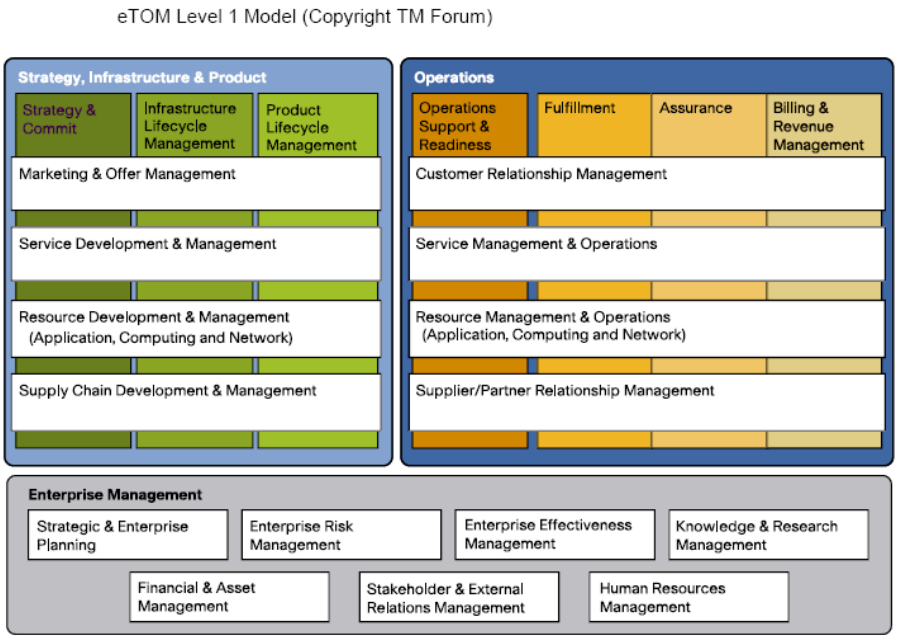


Figure 3.5: eTOM level 1, Source: Cisco systems (2009)

Following this level is level 2, 3, which breaks down higher level to a more detailed ones which out of scope of this research , according to researcher, no local firms adopting above framework in telecommunication or service provider domain.

3.8.5. IT Service CMM

IT Service Capability Maturity Model is open model derived from Software Maturity Capability model developed by Software Engineering Institute and the first version launched in 1999. According to Clerc (2004), the formwork presents the maturity growth path that an IT organization can follow to improve its IT processes and services, the formwork consist of

five levels and each level represent a stage in organization maturity. By implementing process in each level starting from bottom and up, an IT organization can improve its maturity and hence the way of providing IT services. Improving IT organization maturity means shifting it from being dependant on individual approach to be more process-oriented approach, in this context; it should be noted that organizations at higher maturity level don't necessarily provide higher product or service quality, but they deliver IT services in more mature and consistent way than organization at lower maturity level. According to Stucki (2004) determining maturity level is based on assessment that can be done by organization itself or by third party who is credible and competent to do such assessment.

Objectives of IT service CMM

- Provide reference model to assess organization IT service maturity current situation.
- Provide guide line to improve IT service maturity and hence IT service delivery.

IT Service CMM levels

- **Initial** (chaotic, ad-hoc) is the starting point for use of a new or undocumented repeat process.
- **Repeatable** - the process is documented sufficiently such that repeating the same steps may be attempted.

- **Defined** - the process is defined/confirmed as a standard business process, and decomposed to levels 0, 1 and 2.
- **Managed** - the process is quantitatively managed in accordance with agreed-upon metrics.
- **Optimizing** - process management that includes process continuous optimization/improvement.

The following diagram illustrates IT service CMM levels

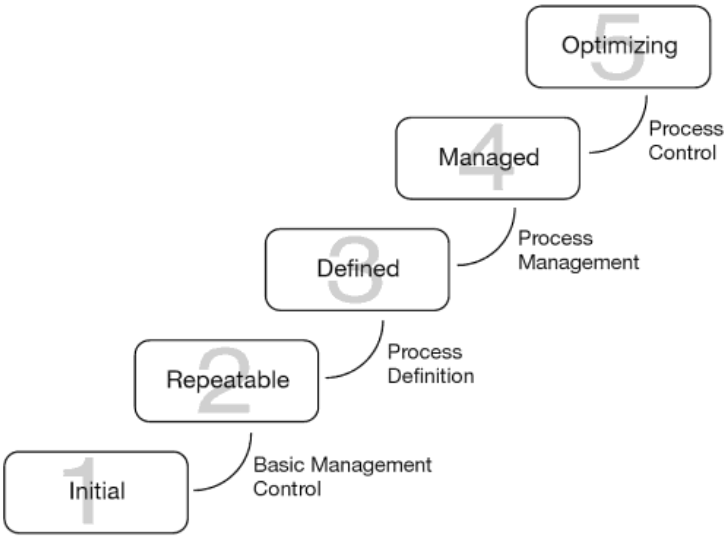


Figure 3.6: IT Service CMM Model. Source: Stucki (2004), Clerc (2004)

Each maturity level contains set of key process areas and each process area consists of set of goals, in order to achieve goals; the organizations needs to implement number of practices, these practices can be grouped into what

is so called common features, the below diagram illustrates maturity level in details

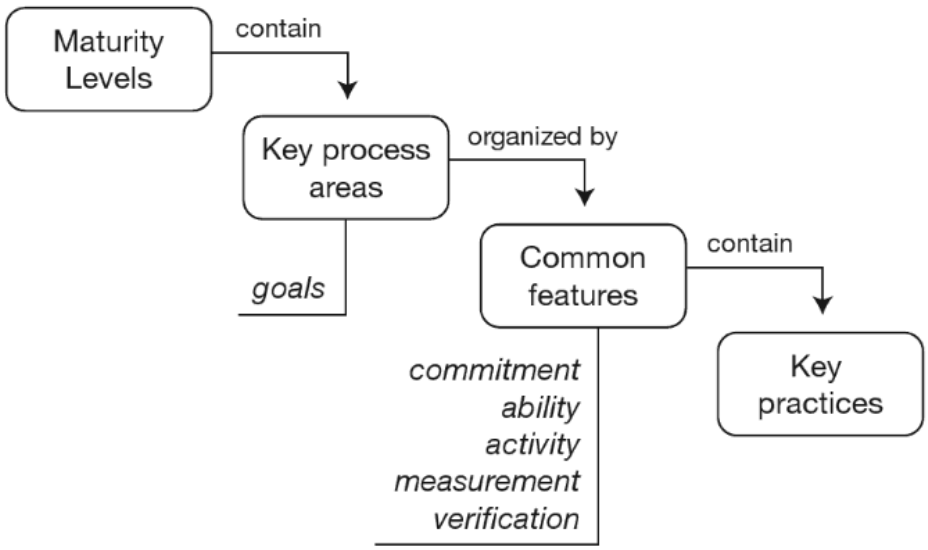


Figure 3.7: IT service Maturity level details, Source: Stucki (2004), Clerc (2004)

3.8.6. CoBIT Framework

CoBIT is an acronym for Control Objectives for Information and Related Technology, this framework mainly focuses on IT governance in term of managing and controlling IT resource, risk, security, and IT alignment with business. CoBIT practices optimize IT-enabled investment and ensure service delivery, it should be noted that IT governance is the responsibility of executives and the board of directors, and consists of the leadership, organizational structures and processes that ensure that the enterprise's IT

sustains and extends the organization's strategies and objectives" as being clarified by IT Governance Institute (2007).

CoBIT Objectives:

According to "IT Governance Institute" (2007), for IT to be successful in delivering IT services according to business requirements, organization's management should set an internal control system or framework in place that contributes to these needs by:

- Making a link to the business requirements
- Organizing IT activities into a generally accepted process model
- Identifying the major IT resources to be leveraged
- Defining the management control objectives to be considered

CoBIT helps to achieve above IT governance by providing a framework to ensure that:

- IT is aligned with the business strategies, trends and objectives
- IT enables the business and maximizes benefits
- IT resources are used efficiently
- IT risks are managed appropriately

CoBIT Focus Area:

For optimized and successful IT governance, CoBIT focuses on the following areas illustrated in the below figure.

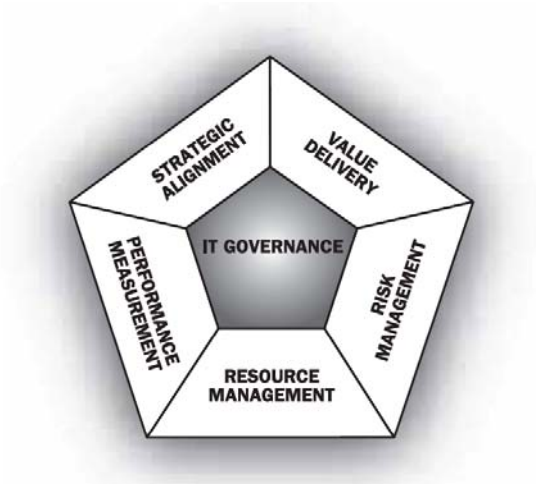


Figure 3.8: CoBIT Focus Area, Source: IT Governance Institute (2007).

The main functionality of each area includes:

- Strategic alignment focuses on alignment of IT plans with enterprise plans.
- Value delivery is about ensuring that IT delivers the expected benefits against the strategy.
- Resource management is about the optimal investment, and the proper management of IT resources.
- Risk management requires risk awareness by senior corporate officers, and a clear understanding of the enterprise risk.
- Performance measurement tracks and monitors strategy implementation, projects, resources, processes, and service delivery. The below figure illustrates CoBIT main principal for IT governance to ensure that organizations achieve their business objectives.

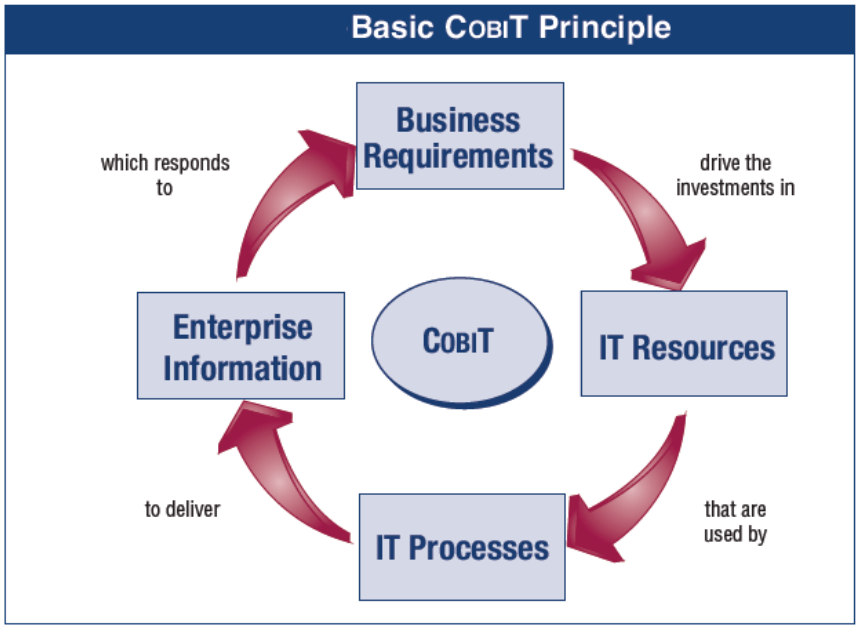


Figure 3.9: CoBIT principles, Source: IT Governance Institute (2007).

3.9. ITIL Framework

ITIL is an acronym for Information Technology Infrastructure Library, it's a public framework that describes IT best practice processes, It provides a framework for the governance of IT, and focus on continual improvement of quality of delivered IT services from both business and customer perspectives**,** ITIL describes IT service management in five stages-clarified later in this chapter-, these stages are service strategy, design, transition, operation, and continual service improvement as being clarified by OGC. (2007).

3.9.1. History

According to OGC (2007), ITIL was published between 1989 and 1995 in UK by Office of Government Commerce (OGC) and universally accepted

in 2007 when OGC published version three which covers the whole IT service lifecycle. Today many companies have implemented ITIL applications like HP, Computer Associate (CA), and Microsoft.

3.9.2. ITIL Framework Objectives

According to ITIL publications, ITIL has the following main objectives:

- Align IT services with the current and future needs of the business
- Improve the quality of IT services
- Reduce the cost of providing the IT services
- Increase service availability

3.9.3. Benefits of ITIL

Because ITIL was built based on best practices; it provides the following benefits to organizations:

- Provides a single documented framework for IT best practices across the IT organization.
- Identifies roles and responsibilities for IT service management.
- Help to reduce the IT cost through optimizing service delivery processes, and proactive approach (e.g. Configuration management, problem management, and proactive maintenance).
- Supports ability of IT to measure and improve internal performance and service provisioning

- Defines IT in terms of services rather than systems
- Supports improvement of user productivity (resource reallocation)
- Improves communication and information flows between IT and organization business departments (e.g. systematic processes)
- Improves ability of IT to adjust as business opportunities and challenges are presented (e.g. manage Ad-Hoc changes)
- Improves relationship of IT with the business (e.g. Through understanding business needs and deal with it as such).
- Improved time to market for new product or service.

The following are the main reasons behind choosing ITIL framework to build proposed IT service delivery framework as will be clarified in chapter six:

- ITIL is the most famous IT framework around the world
- ITIL is based on best practices
- Redundancy of application and management tools that based on ITIL
- Redundancy of training material
- Flexible framework that allow organization to customize processes
- ITIL suitable for all types of IT companies

3.9.4. ITIL Service Lifecycle Management

As motioned above, the service lifecycle contains five core elements, illustrated in the below figure, each one has a set of processes, the service lifecycle uses hub and spoke design; where the service strategy at the hub

and other core elements are the revolving lifecycle stages, the cycle is surrounded by continual service improvement as being clarified by OGC (2007)

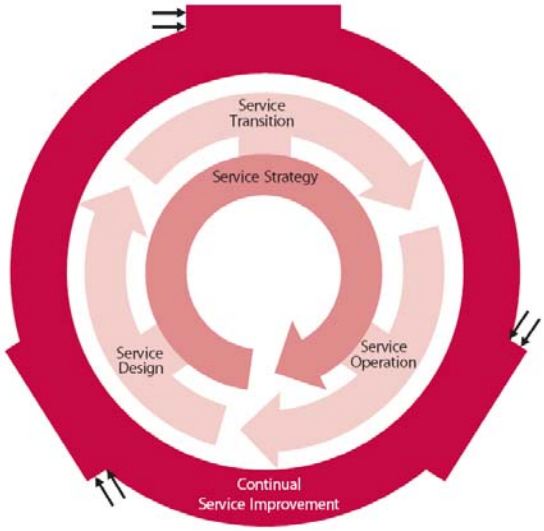


Figure 3.10: ITIL lifecycle management, Cartlidge (2007)

As illustrated in the below diagram, the service lifecycle is initiated by requesting change request and associated requirements from business side. Requirements are identified and agreed in the service strategy stage within a Service Level Package (SLP) and a defined set of desired business outcomes. Then SLP passes to the Service Design stage where a service solution is produced together with a Service Design Package (SDP) containing everything necessary to take this service through the remaining stages of the lifecycle. The SDP passes to the Service Transition stage, where the service is implemented, evaluated, and tested, at this stage also the Service Knowledge Management System (SKMS) is updated, and the service is transitioned into the live environment, where it enters the Service

Operation stage. Periodically and wherever possible, Continual Service Improvement identifies opportunities for the improvement of weaknesses or failures anywhere within any of the lifecycle stages as being clarified by OGC (2007).

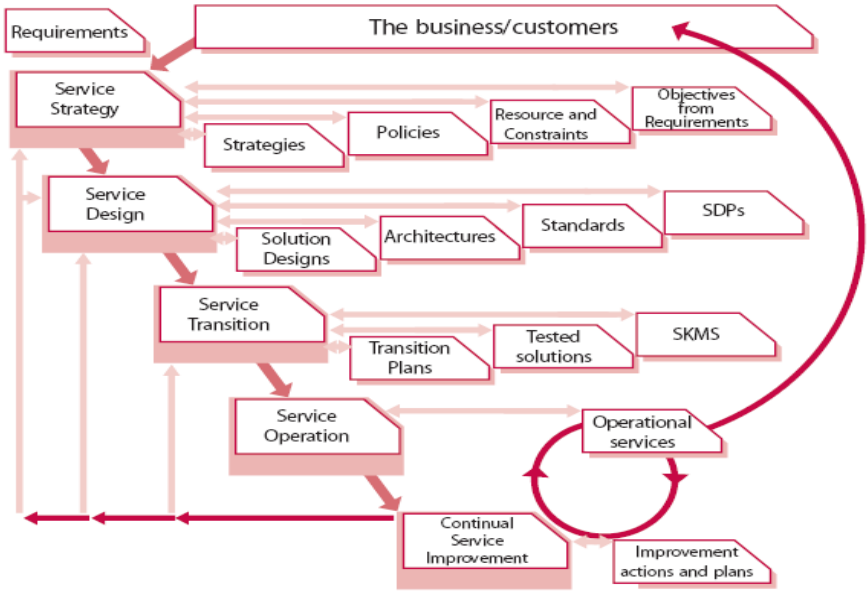


Figure 3.11: ITIL lifecycle Details, Source: Cartlidge 2007.

Service Strategy

The service strategy for any service provider should be based on the fact that customer is looking to buy a satisfaction of particular needs, not to buy products, so that all aspects that satisfy this approach should be taken into consideration when putting strategies for new products or service. According to Cartlidge (2007), ITIL service strategy provides guidelines of how to design, develop, and implement service management not only as an organizational capability but also as a strategic asset; it provides guidelines about value creation, service structure, market and offering, resource

allocation and other aspect that should be aligned with organization business strategies.

ITIL and Four Ps of Strategy:

According to ITIL Service Strategy ver.3 (2007), ITIL service strategy is adopting the four Ps of strategy which are:

- Perspective: the distinctive vision and direction
- Position: the basis on which the provider will compete
- Plan: how the provider will achieve their vision
- Pattern: the fundamental way of doing

Service Strategy Key Roles and Responsibilities:

According to OGC (2007), Service strategy defines roles and responsibilities that will help to execute service strategy, however, these roles can't be found in every organization that wants to implement ITIL, but it can be covered by other roles that are capable to handle such responsibility specially here in Palestine where most of IT companies are small to medium ones, the key roles are:

- Business Relationship Manager

Business Relationship Manager or Demand Management Manager is responsible for establishing business relation with customer either internal or external, and responsible for understanding business and customer

requirements, it works closely with project or program managers in this regard.

- Product /Project/ Program Manager (PM)

Key responsibilities of PM include developing and managing services across the service development life-cycle; according to OGC (2007) this includes responsibilities of design, transition, and handover service to operation team.

Service Design

According to ITIL service design ver.3 (2007), the role of Service Design within the business change process can be defined as:

"The design of appropriate and innovative IT services, including their architectures, processes, policies and documentation, to meet current and future agreed business requirements".

After understanding service strategy and set of services to be implemented according to service roadmap, the next step is to design service. According to Oleson (2009), Service Design is focusing on designing services according to business needs, it includes design principles and methods that will be used to convert strategic objectives into services, this include- but not limited to- design the required processes to support the service lifecycle, solution design, service level management, Service Design Packages (SDP), and architecture. In this context it should be noted that the scope of Service Design is not limited to new services; it also includes the

required changes and enhancements on the currently launched services to increase or maintain value to customers.

Service Design Key Roles and Responsibilities:

According to Oleson (2009) Service Design defines roles and responsibilities that will help to execute Service Design, however, these roles can't be found in every organization that wants to implement ITIL, but it can be covered by other roles that are capable to handle such responsibility specially here in Palestine where most of IT companies are small to medium ones, the key roles are:

- Service Design Manager

Key responsibilities of Service Design Manager include – but not limited to- ensuring that all service strategies are reflected in service design practices, ensuring that all design documents meet business requirements, and monitoring and measuring service design efficiency and effectiveness.

- IT Planner

Key responsibilities of IT planner include –but not limited - develop plans, coordinate with all related parties to ensure smooth implementations of these plans, review IT costs periodically to be aligned with allocated IT budgets ,identify external and internal factors that affect implementation of IT plans and put proper actions, and finally review IT performance and put actions for improvements.

- IT Designer / Architect

Key responsibilities of IT Designer/Architect include –but not limited to- overall service design aspects of services, ensure that design is compliant with service strategy and meet customer needs, translating logical design to physical design, taking into account business requirements, target environments, and related processes.

Service Transition

After approving design of new product or service, now it's a time to handle it to implementation team who is responsible for building the solution based on Service Transition processes that provide guidance in this regard. According to OGC (2007) and Oleson (2009), Service Transition includes processes to put plans for implementation, manage resource that are required to build solution, testing and release solution to production, these processes include the following:

- Plan and prepare release
- Build and Test solution
- Service testing and pilot (if pilot is necessary)
- Deploy to production or retire from operations
- Review and close service transition

Service Transition Key Roles and Responsibilities:

Service Transition define roles and responsibilities that help to execute Service Transition in term of implementation, testing, and quality assurance, however, these roles can't be found in every organization that

wants to implement ITIL, but it can be covered by other roles that are capable to handle such responsibility specially here in Palestine where most of IT companies are small to medium ones, the key roles are:

- Service Transition Manager

Key responsibilities include –but not limited to – overall planning for service transition delivery including continual improvements, budgeting and accounting service transition, making final recommendations for business and IT functions to release and deploy service to production, and ensure that final delivery meets business needs.

- Configuration Manager

Key responsibilities include- but not limited to - , agree on the scope of configuration to be made and evaluate current configuration and ensure that all of them are in line with business requirements

- Change Manager

Key responsibilities include- but not limited to –review all change requests from either new or currently implemented changes to ensure that they met the required objectives, and make priorities between changes according to business needs.

Service Operations

After the service is planned and implemented into production environment, it's now a time to keep this service up and running according to business

needs and within agreed Service Level agreement SLA, this is the role of Service Operation. According to OGC (2007), Service Operation includes guidelines on achieving effectiveness and efficiency in the delivery and support of services to ensure service stability and maintain the service value for both; the customer and the service provider, it includes all processes that are responsible for "business-as-usual" activities. In Service Operation, the operation team has been trained to handle day-to-day activities to maintain service availability. The main processes of Service Operation include event management, incident management, and problem management.

Service Operation Key Roles and Responsibilities:

In general, operation team is dedicated to do required operations as motioned above, but in many cases, operation team take responsibilities of other roles in service management lifecycle, here in Palestine most operation teams are used in other service management lifecycle like in service Design and Transition.

- Service Desk Manager

Key responsibilities include –but not limited to – overall service desk activities, escalation point, and take responsibility of incidents and service requests.

- Operation Manager

Key responsibilities include –but not limited to – operation control and day to day activities, in addition to report senior management on overall operation issues.

- System/ application administrators

Key responsibilities include –but not limited to – administering systems applications under his responsibilities and report direct manager about operations issues.

Continual Service Improvement (CSI)

Continual Service Improvement provides guidelines for maintaining and improving value for customers through periodic review of products or services to achieve better design and operation of services. It combines principles, practices, and methods from quality management based on Deming cycle, the Plan–Do–Check–Act (PDCA) model specified in ISO/IEC 20000 as clarified earlier in this chapter. OGC (2007) CSI includes three major processes that should be followed to get effective service improvements which are the 7-Step Improvement Process, Service Measurement, and Service Reporting.

Below figure illustrates continual service improvement (CSI) model, it compares the current position of organization with desired one through gap analysis. It should be noted that CSI as it name imply is a continuous process to evaluate and addresses changes in requirements, strategies, market, technology and any other internal or external factors

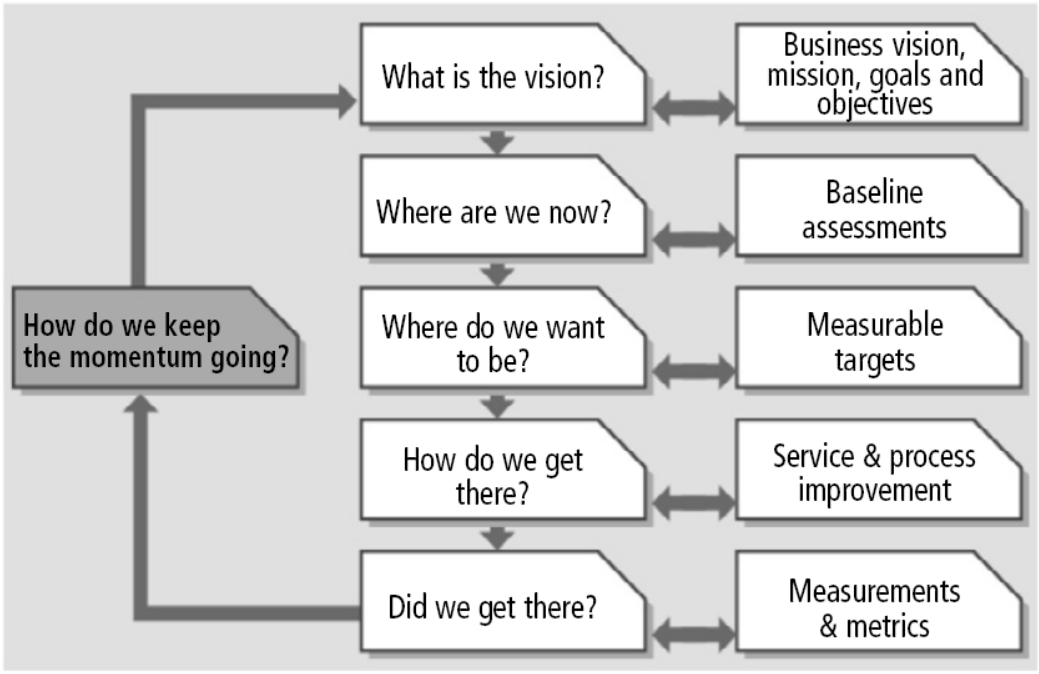


Figure 3.12: ITIL CSI, Source: Cartlidge (2007)

3.10. Summary

Nowadays Information Technology is becoming industry, many governmental and non governmental bodies initiated projects to organize, govern, and control this industry by standards and management frameworks and to produces effective, efficient, and high quality IT services, these management frameworks can be categorized as quality management frameworks, quality improvement, IT governance, information management, and finally project management frameworks. These frameworks have many benefits to IT organizations since it will help to develop clear IT structure and hence more effective and efficient IT service delivery, it also help IT-based organizations to produce high quality

service in addition to better man power and other resource utilization, and as a result better customer satisfaction.

This chapter also clarified the foundation IT Service quality and its relation to TQM, Six Sigma, Deming Cycle which also called Plan, Do, Check, Act (PDCA) Cycle, Then it discussed in details the management framework ISO9000 and its incredible principals. After introducing the reader to management frameworks, the researcher focused on IT frameworks, its objectives, benefits, and management models, these frameworks include ISO/IEC 20000, eSCM-SP, eTOM, IT service CMM, CoBIT, and finally Information Technology Infrastructure library ITIL which is discussed in details since it will be the base for building the proposed IT Service Delivery Framework for Palestinian IT-based organization.

Chapter 4

4. Research Methodology

4.1. Overview

In the previous chapter; literature review, the researcher clarified management frameworks especially those related to information technology and their benefits for enhancing IT service delivery process across the service lifecycle. Literature review along with adopted methodology consist the base for building proposed IT service delivery framework. This chapter provides an overview of methodological approach that has been adopted by researcher to investigate current IT service delivery process in Palestinian IT-based organizations. This research will address the major problems related to IT service delivery process since it's the most interactive processes with customers and the most effective one that will change customer behavior and satisfaction, it will mainly focus on investigating service delivery approaches in the Palestinian IT-based organization and address their service strategy and alignment with business strategies, service requirements, design and implementation processes, and finally the service quality and support. Based on adopted methodology and after determining the major factors in term of strength weaknesses, opportunities, and threats, the research will suggest framework for service delivery processes across the service life cycle that based on customized international frameworks to fit Palestinian IT firms.

4.2. Research Methodology Paradigms

In general; research methodology paradigms include the following three major types:

- Qualitative approach
- Quantitative approach
- Mix between the above two types

Qualitative approach is used to measure and understand attitude, positions, and behavior of people, it's good for smaller and selected groups, Qualitative data collection sometimes uses unstructured or semi-structured techniques such as open- ended responses, interviews, participant observations, field notes, and focus group that has been used in this research along with semi-structured interviews as will be clarified later.

According Dawson (2002), the focus group is powerful tool to understand people's thoughts, feelings, and directions. It is usually conducted by inviting small group of professionals that consist of six to ten people to gather for a few hours with a moderator to talk about a product, service, or organization. The moderator needs objectivity, knowledge of the subject, and some understanding of group behavior. The moderator starts with general questions to open subject before moving to more specific issues, then after finishing discussion, the moderator and researcher collect all responses together to formulate findings according to Dawson (2002).

According Johnson and Christensen (2008) Qualitative method is used to understand and analyze social interactions, it's good for smaller and not

randomly selected groups, and data analysis is used to identify patterns, features, and themes.

Quantitative methods is used to identify statistical relationships like test hypotheses, look at cause and effect, and then make predictions, and usually the sample is random and large if compared with qualitative approach. Usually quantitative research is objective, because it mainly depends on accurate measurements using data validation tools. According to Strategic Counsel, a market research firm, Quantitative methods include telephone survey, mail survey, and web survey which was used in this research.

According to Thomas (2003) Quantitative research tends to be on numerical measurement of specific aspect of phenomena while Qualitative research is a multi-method in focus involving an interpretive naturalistic approach to its subject matter, it involve case studies, focus groups, and interviews.

According Spratt & Walker & Robinson (2004), the mixed method paradigm uses combination of qualitative and quantitative methods together, mixed method provides more comprehensive answers to research questions, going beyond the limitations of a single approach.

Mixed-methods research has certain advantages; it gives indication about power and solidity of research and provides guidance to others about what researchers intend to do or have done. According to Tashakkori and Tedllie (2003), multiple methods in a research helps to research a process or a

problem from all sides, but may be high in cost, and require the researchers to work in multiple teams.

4.3. Adopted Research Methodology Paradigm

In this research; the researcher adopted mixed method approach where survey was used as quantitative method and focus group and semi-structured interviews were used as qualitative methods. The below table illustrates advantages and disadvantages of mixed method research according to Tashakkori and Tedllie (2003).

Table: 4.1: Advantages and disadvantages of Mixed Method Approach, Source: Tashakkori and Tedllie (2003)

Advantages	Disadvantages
Build a study based on the strength of both quantitative and qualitative research methods	May be high in cost
May provide a complete picture of a research problem	Requires training in both methods
multiple methods in a research helps to research a process or a problem from all sides	May require researchers to work in multiple teams
Usage of different approaches helps to focus on a single process and confirms the data accuracy	May take longer time to complete the research

4.4. Research Methodology Process

The below diagram illustrates the process of research methodology which was adopted by researcher

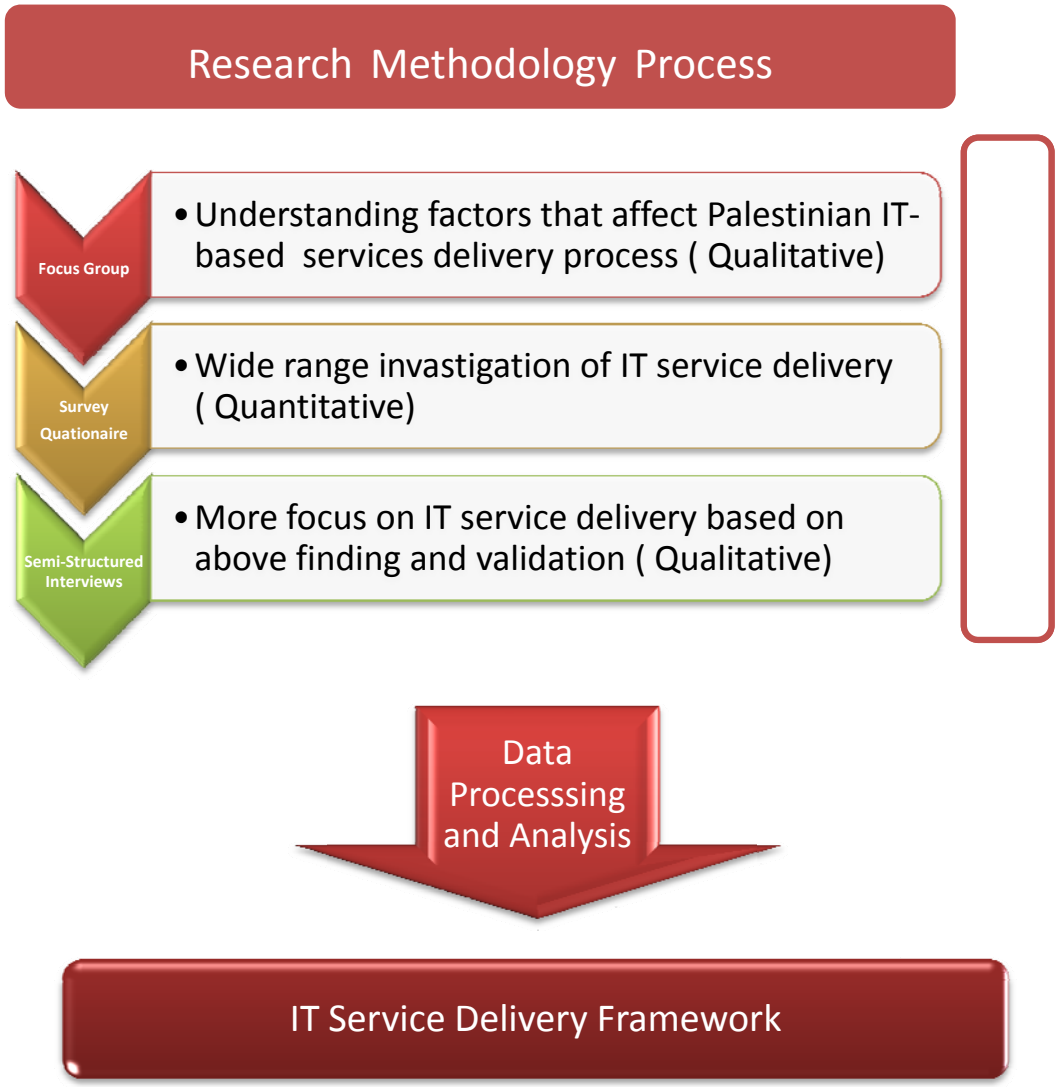


Figure 4.1: Research Methodology

4.4.1. Focus Group

To understand the current situation of IT service delivery process in Palestinian IT-based organization, a group of IT professional were invited to review the adopted service delivery process to identify related problems and identify internal and external factors that affect it in term of strengths, weaknesses, opportunities, and threats which represent internal factors evaluation (IFE), and external factors evaluation (EFE) in SWOT technique respectively, a cross functional group consisted of eight professionals(IT and non IT professionals) was invited to make brainstorming about IT service delivery, the group was consisted of middle management (department managers) as well as staff level (field employees) to pull their opinions about the adopted IT service delivery process, in this regard; it should be noted that focus group findings along with literature review consist the base for survey design illustrated below in the next section.

4.4.2. Survey Questionnaire Design

Based on focus group finding, and literature review; the researcher conducted survey to make more penetration inside IT community in order to address IT-service delivery process in details. The survey (questionnaire) was consisted of four parts where each part focuses on the major IT service delivery process across the service lifecycle, these parts are:

- General information.
- Business and Service Strategy.

- Service/ Product Design.
- Service Implementation /Operation / Continuous Improvement.

Part one contains general information about participants and IT companies, this information include age, gender, company field and size, IT position, and finally company address.

The objectives of this part were to know the nature of companies and participants who was being surveyed.

Part two addresses IT-based organization business and services strategy, it contains five questions that highlight the understanding of participant to company business strategy, understanding IT service strategy, alignment of service strategy with business strategy, and finally asking if the company has a standard or framework for IT service delivery.

The objectives of this part were to identify if there is a clear service strategy that is aligned with business strategy, and to know the adopted frameworks that are used to deliver IT services, this will help in identifying key factors that affect service delivery and should be taken into considerations when building proposed IT service delivery framework that will be clarified later in chapter six.

Part three is addressing service/ product design process, its contains also five questions that highlight the presence and efficiency of key design aspects and service development that are adopted by IT organization, this include requirements collection methodology, assessment phase, service level agreement (SLA), and solution design.

The objectives of this part were to know the presence and efficiency of service design process adopted by IT organization to design IT-based services.

And finally part four is addressing service implementation, operation, and continual service improvements, it contains twelve questions that highlight key processes that have been adopted by IT organization to implement, operate, and improve delivered services that meet customer needs. This include the efficiency and effectiveness of implementation processes for designed products or services, changes request process, testing and validation methodology, presence of quality assurance, handover of delivered products or services to operation team, incident and problem management, security and access management, service availability, helpdesk unit, process of continual improvements, and finally measuring customer satisfaction.

The objectives of this part were to identify the presence, efficiency, and effectiveness of those key processes, and to identify key factors that should be taken into considerations when building proposed IT service delivery formworks which will be clarified later in chapter six.

4.4.3. Semi-Structured Interviews

According to Kajornboon (2005) semi-structured interview is a technique used to collect qualitative data by setting up a situation (the interview) that allows participants to talk about their opinions on a particular subject. The objective is to understand the participant's point of view about subject

matter. Semi-structure interview was adopted by researcher to get more focus into service delivery process and discuss major problems and factors that affect IT service delivery interactively with IT professional and decision makers being interviewed, a sample of six professionals was chosen in this regard. The interview contains four parts and each part is discussing specific IT processes that consists part of service lifecycle, these parts are:

- Business and service strategy and alignment between them
- Product development and design processes
- Implementations and deployment processes
- Operations and continuous improvements processes

4.5. Summary

In this chapter the researcher clarified the methodology that was adopted to conduct research, it consists of mixed method approach that combines qualitative and quantitative methods. Focus group was used as qualitative method to understand the problem of Palestinian IT service delivery process, a group of cross functional team was invited to make brain storming about this process, and then survey was conducted to pull the opinions of IT community about the same subject, then the researcher conducted semi-structured interviews to make validation of survey and focus group findings.

Chapter 5

5. Data Gathering and Analysis

5.1. Overview

Based on mixed method adopted by researcher which combines both quantitative and qualitative methods and clarified in methodology chapter, this chapter clarifies data collection and analysis for conducted focus group, online survey, and semi-structured interviews.

5.2. Focus Group Findings and Analysis

Based on literature review, the researcher had invited a group of professional to half-day brain storming session to figure out and understand the current situation of IT service delivery process in Palestinian IT-based organizations in order to identify related problems and identify internal and external factors that affect it in term of strengths, weaknesses, opportunities, and threats which represent internal factors evaluation (IFE), and external factors evaluation (EFE) in SWOT technique respectively. The group of eight professionals was consisted from middle management (department managers) as well as staff level (field employees) to pull their opinions about the adopted IT service delivery process in this regard. In this brainstorming session; attendees discussed IT service delivery process to identify below factors:

- Internal Factors (IFE)

- Strengths : identify internal IT service delivery strengths in order to leverage them
- Weaknesses : identify internal weaknesses in order to try to overcome them

- External Factors (EFE)
  - Opportunities: identify external opportunities that enhance IT service delivery and try to exploit them.
  - Threats : identify external IT service delivery threats and try to mitigate them

The below tables illustrates internal and external factors of SWOT technique that affect IT service delivery based of focus group findings.

Table 5.1: IT Service Delivery Strengths

Strength (S)	
Factor	Notes
Technical Skills	IT employees posses good technical skill which will facilitate design, implementation, and operation of IT services
Project management Unit	The existence of PM unit inside IT is strength point that can be utilized to manage and streamline IT projects
Experience of IT staff and competencies	IT community has many experts who can lead service development

Table 5.2: IT Service Delivery Weaknesses

Weaknesses (W)	
Factor	Notes
Work package efforts estimation	Some of business employees clarify that IT personnel under estimate completion date for requested product or service , to overcome problem , it's necessary to adopt clear assessment process
Quality of delivered items	Some delivered items did not pass User Acceptance Test (UAT) due to some bugs that need fixing, to overcome this ,it's necessary to review testing methodology
Product development process automation	Automating product development process will facilitate and speed up required deliverables
Absence of revenue assurance tools	Proactive revenue assurance tools will guarantee minimizing required operations and time to fix bugs or rework
Testing environment	Its noted that no testing labs and environments, such facilities will minimize bugs and risk

Table 5.3: IT Service Delivery Opportunities

Opportunities (O)	
Factor	Notes
Risk Management	Its noted that no clear risk management methodology (mitigation, avoidance, and transfer) in place for most IT organizations
Knowledge sharing	Knowledge sharing is an opportunity for IT team to secure skill redundancy and hence better management for required deliverables
Technologies	Technologies represented in the used tools for service delivery enhance dramatically the quality and reduce the delivery time of delivered products or services

Table 5.4: IT Service Delivery Threats

Threats (T)	
Factor	**Notes**
Platform limitations	**Limitations of platform that is used to deliver services consists a threat in term of fulfilling business requirements**
Platform control and SLA with vender	**IT organization usually sign service level agreements (SLA) with equipment/platform providers, such SLA should be studied carefully before issuing contract.**
Commercial team knowledge in IT platform capabilities	**Its noted in many cases that business team doesn't know technical capabilities of service delivery platforms, this can be overcome by conducting awareness programs**
Supplier dates	**For those products /services that need involvements of supplier; it's necessary to estimate required date for delivery of required components or deliverables**
Last minute changes	**In many times; product or service owner makes slight changes in the final product /service in the last moments**
Unclear Requirements	**Unclear requirements increase time needed to complete deliverables, all required details should be added in a structured document to reduces inquiries as much as possible**
Ad-Hoc requests	**Ad-hoc request may affect product or service currently under implementation, so delay might occur in service delivery.**
Dependencies on externals service providers	**IT team can't control external providers sometime for justified delay in equipment delivery, margin should be taken into consideration if external provider is involved in service development process**
Confidentialities of products or services	**Awareness and access management process should handle this issue**
Competitors, competitors products	**Functional department may request urgent service in very short time frame to be launched in the market, the requested service might not be listed in functional department roadmap and hence delay for under development services**
Changing business priorities	**Changing business priorities due to business considerations should be managed smoothly and communicated clearly between IT and business team**

5.2.1. Addressed Problems Based on Focus Group Findings

Based on literature review and after studying mentioned above factors that affect IT service delivery; below table lists the main issues that should be taken into considerations when building proposed IT Service Delivery Framework

Table 5.6: Focus Group Main Findings

#	Issues
1.	No clear relationship between business strategy and service strategy
2.	No cartelized demand and project management
3.	No SW tools to be used to facilitate service delivery projects
4.	No clear Service Level Agreement (SLA) in place between IT and its customer
5.	No end-to-end process for service delivery
6.	Weakness in project management skills
7.	No service oriented architecture for IT organizations
8.	Absence the effective role of IT governance
9.	Ad-hoc changes from business side
10.	Unclear requirements for new products or services
11.	Absence of risk management
12.	Weakness in testing and quality assurance
13.	No clear configuration and change management
14.	Suppliers and venders management and control
15.	Business team awareness in IT resources capabilities

5.3. Survey Results and Analysis

Based on literature review of IT service delivery frameworks, the researcher had designed survey to pull the opinions of IT professionals about IT service delivery process that is adopted by Palestinian IT organizations, a sample of 84 companies was chosen which consists the majority of IT organizations that deliver IT services in Palestine, a web based survey link is sent to all companies with assistance of Palestinian IT Associations (PITA); the IT body for private sector in Palestine, PITA circulated survey to all PITA's members, at the same time the researcher contacted many companies by phone and email to encourage IT professionals to fill the survey, the researcher got 70 responses from 84 companies, which is a representative sample with confidence level 95% and marginal error 5% which is globally accepted according to Ayyub and McCuen (2003).

The survey is consisted of four parts, the first one is general information while the other three parts are handling IT service delivery processes; service and business strategy, service design, service transition (implementations and deployment), and service operation and continual improvements. According to survey results, the majority of IT professional ages are between 20 and 29 years, which indicate that the work force of Palestinian IT scoter from young people and actually this is one of competitive advantages of Palestinian ICT sector as clarified earlier in section 2.3 "Palestinian ICT competitive advantage". This competitive

advantage can be utilized, since young people have the ability to change their way in developing and delivering IT services if service delivery strategy or processes are changed. They just need proper training in this regard.

Survey results also showed that majority of IT professionals are from males, since the percentage of males was around 89 %.

44% of professionals being surveyed were from managerial level and 46 % from staff level, this gives an indication about the survey penetration to all levels.

With respect to company field, the survey data showed that 60% of ICT professionals are working in service providers companies, while the other 40% are working in different ICT fields like software development, and business solution. According to this finding, it's important to focus on IT service delivery which gives indication about the importance of this research and its objectives to develop customized IT service delivery framework.

Business and Service Strategy

The survey results showed that 85% of IT professionals have excellent or good understanding of their company's business strategy, and 76% of them have good understanding of service strategy, but when asking IT professionals about alignment between business strategy and service strategy; only 66% of IT professional strongly agree or agree that such

alignment is exist. From this point it's necessary to address this alignment deeply according to survey and focus group findings that mentioned earlier in this chapter.

The below figure illustrates IT professionals opinions about alignment between business strategy and service strategy

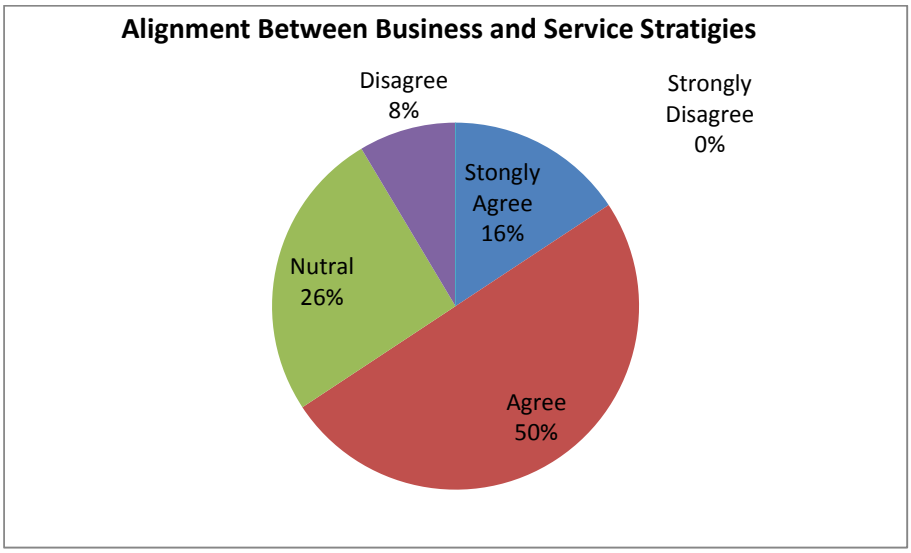


Figure 5.1: Alignment between business and service strategies

About IT department's participation with other business entities during service concept development, the survey showed that 70% of IT professionals say that such cooperation is excellent or good, while the other 27 % says such cooperation is average or poor, the other 3% have not put their opinions in this regard. Based on this finding, it's necessary to look at the involvement of IT department during service concept development to get better alignment and hence better service development and delivery,

why ?, because there is around one-third of IT professionals ask indirectly to enhance such involvement.

About standards or frameworks adoption, survey data showed that only 44% of IT professionals advised that their IT organizations adopt standards or framework for IT service delivery. This is big indicator that most of IT organizations lack of systematic service delivery process and what they adopt is kind of service delivery practices that are not based on international frameworks. The below figure illustrates this finding

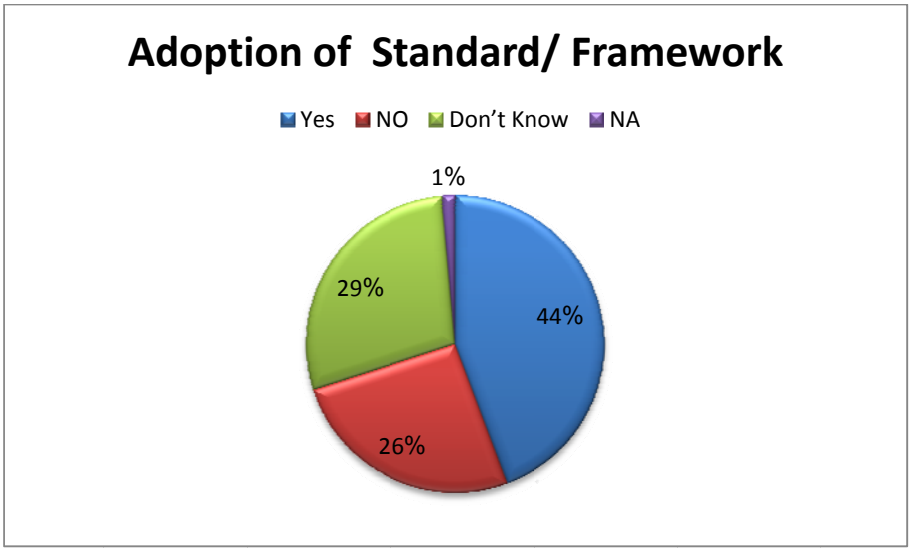


Figure 5.2: Adoption of IT service delivery framework

The survey data showed that 67% of IT professionals strongly agree or agree that their organizations have clear phases for product or service development, 24% are neutrals while the other 9% disagree. Systematic and clear phases of service development is crucial factor in IT service delivery across the service lifecycle, where each phase has its own

processes, adopting clear phases will dramatically reduce bugs, enhance quality, and reduce the cost.

Service/Product Design

Survey results showed that 14% of IT professionals strongly agree that their IT organizations have clear assessment process for received requirements, 66% agree, 13% neutral, and 7% disagree. With respect to requirement collection methodology; survey results showed that 10% of IT professionals declared that their IT organizations don't have requirement collection methodology, and 10% don't know, but when asking about the efficiency of this process; 66% of IT professionals advised that this process or methodology is excellent or good, while the other 34% rate this process as average or poor or didn't put their answer. This is clear indication that many IT organizations need to review their way in the requirement collection methodology to be more efficient, and this will be taken into considerations in building proposed framework as will be clarified later in chapter 6.The below figure illustrates the efficiency of requirement collections methodology according to survey results

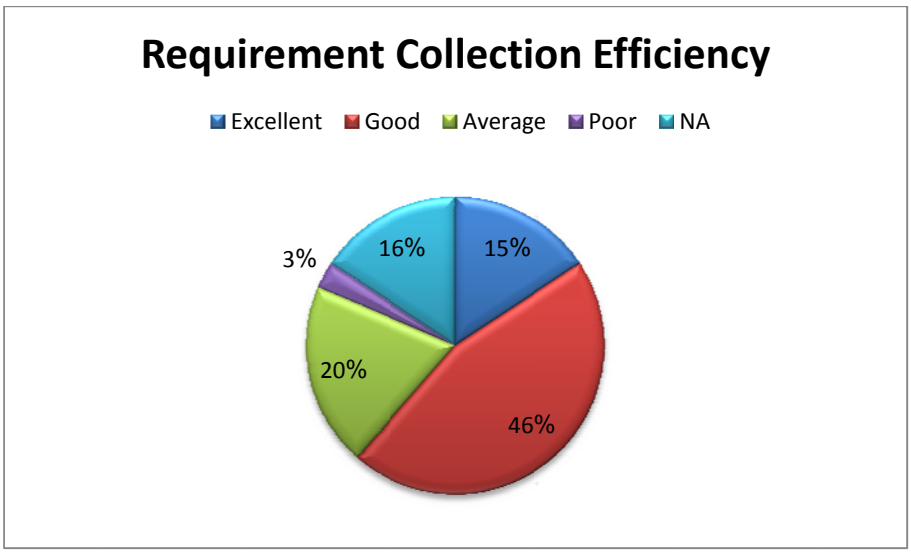


Figure 5.3: Requirements collection efficiency

Identifying Service Level Agreement (SLA) with internal or external customer is very important during design phase, since the required service level will affect design aspects for products or services. Survey results showed that 82% of IT professionals advised that their IT organizations have service level agreement with customers, but again when asking about the efficiency of SLA; only 60% of IT professionals advised that SLA is excellent or good, while the other 40% advised either average, poor, or they don't know.

SLA as an agreement between service provider and customer should be clear and efficient; this important part will be taken into consideration when building proposed IT service delivery framework. The below figure illustrate the efficiency of SLA

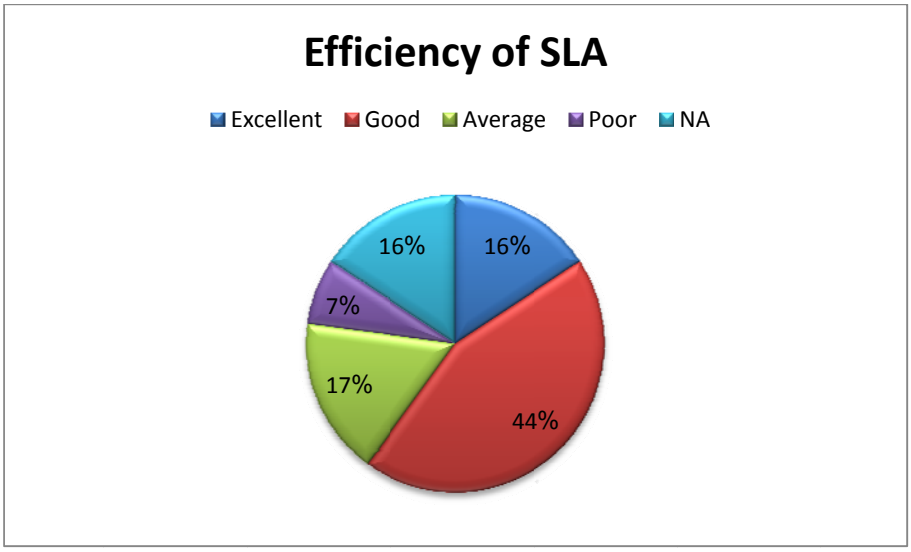


Figure 5.4: efficiency of Service Level Agreement (SLA)

With respect to building solution architecture during design phase, the majority of IT professional 53% advised that their IT organizations sometimes prepare solution architecture, only 38% advised that their IT organization always build such important component during service or product design, this is clear indication about the weakness that should be treated and taken into consideration in building proposed framework. The below figure illustrate the solution architecture statistic according to survey

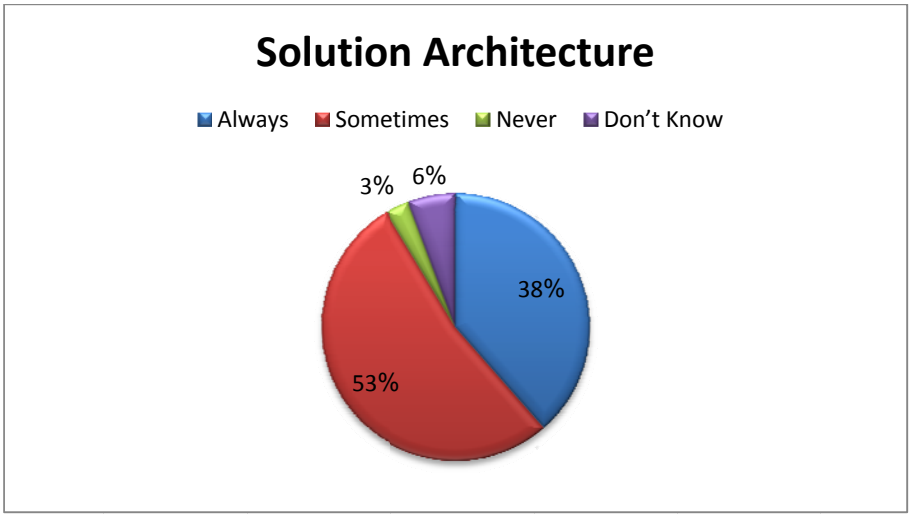


Figure 5.5: Preparing solution architecture

Adoption of quality standard gives IT organization quality power, credibility and trust by customers for delivered product or service, most of Palestinian IT organizations don't have quality standards according to survey findings. Only 37% of IT professionals advised that their organizations adopt quality standard, 32% don't have, and 31% don't know. The below figure illustrates these findings

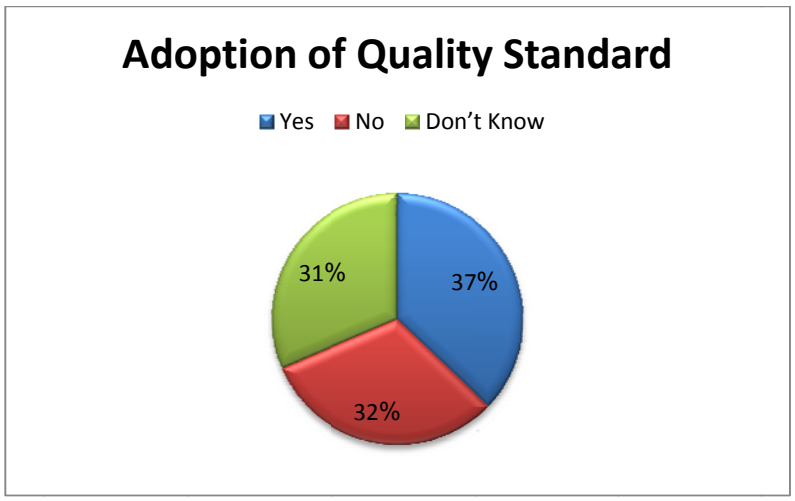


Figure5.6: Adoption of quality standard

Service Implementation /Operation / Periodic Improvements

Service implementation, release, testing, and deployment are critical processes to ensure that product or service is ready for launch, so proper planning along with required resources and good testing methodology will dramatically produce almost bug free products or services that are ready for production and hence easy and smooth handling by operation team who is responsible for day to day operation.

Survey data showed that 82% of IT organizations have clear implementation process, but only 71% advised that implementation process is efficient, so it's important to focus on this process and investigate it deeply to know where exactly the weaknesses reside. The proposed framework will treat this process by suggesting clear and best practice service implementation.

The below figure illustrates the efficiency of implementation process as being showed by survey data

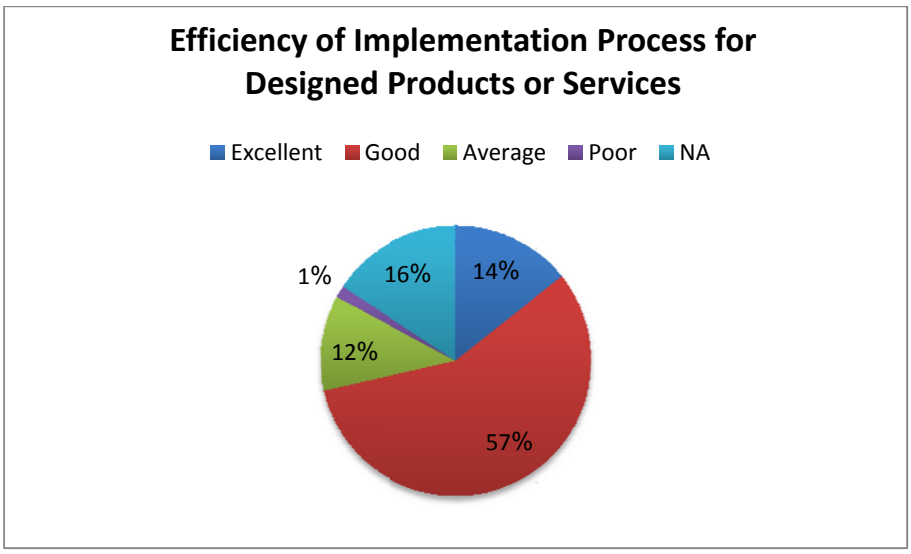


Figure 5.7: Efficiency of Implementation Process for Designed Products or Services

Change request by business team might accrue at any phase of service or product development, this change might be in design, change in implementation, and even change after product or service launch for the purpose of continual improvements.

Survey data showed that the majority of IT professionals 80% advised that their IT organizations have change request process, and only 17% advised that the efficiency of such process is excellent, 49% is good, 14% average and only 1% is poor. The below figure illustrates these findings

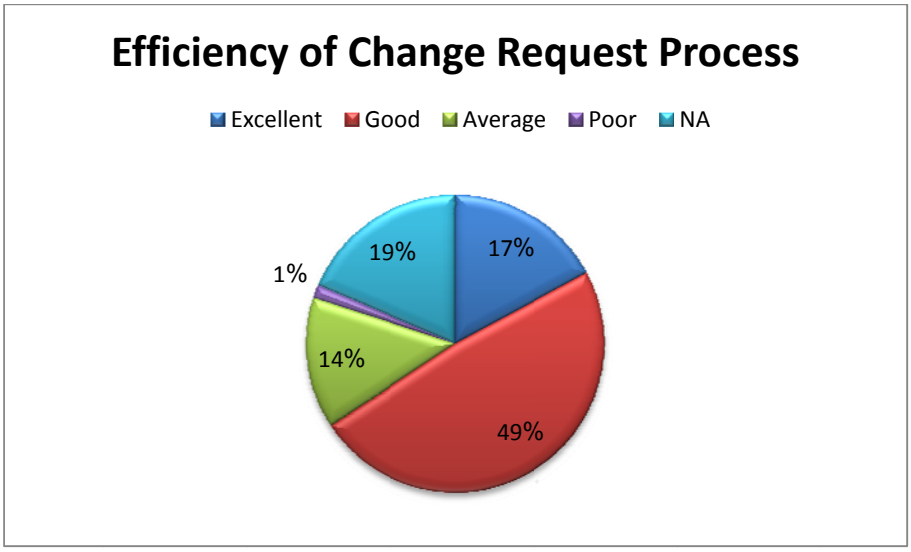


Figure 5.8: Efficiency of change request process

Testing is kind of quality assurance (QA),if conducted properly, it helps to produce almost bug free products or service and ensures that product or service meets business requirements, proper testing methodology helps dramatically in reducing losses after product or service launch due to discovered bugs or defects and helps also in customer satisfaction. Survey data showed that 20% of IT professionals advised that their organizations have excellent testing methodology, 54% good, 19% average, while the other 7% said such methodology is poor or they have no answer. In the same context 62% of IT professionals advised that their IT organizations have in place quality assurance process.

Testing and quality assurance are vital processes that should be addressed carefully because they are directly related to potential losses and customer satisfaction, proposed framework in this research will take into considerations such processes and try to put more efficient and effective

one. When the service or product is implemented and ready for launch, it's now a time to handover it to operation team to perform day to day operations and to keep service up and running according to business needs and within agreed Service Level agreement (SLA). Survey data showed that 69% of IT professionals advised that their IT organizations have clear handover process for support and operation team, 20% of them advised no, while 11% don't know. With respect to efficiency and effectiveness of handover process, only 56% advised that this process is efficient and effective, this is a clear indication that this process needs to be revised and reengineered to enhance its efficiency and effectiveness, below figure illustrates IT professional opinions about efficiency of this process.

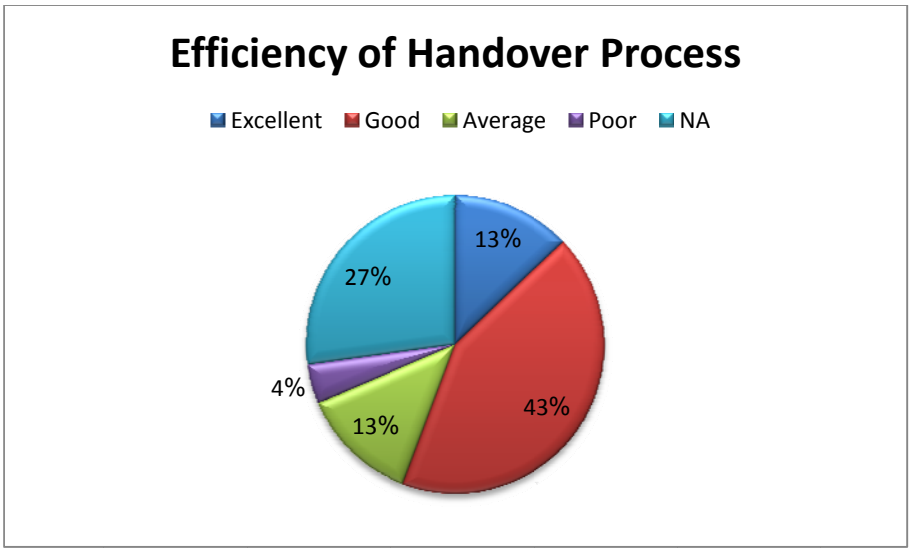


Figure 5.9: Efficiency of handover process

Operation and support team usually handle incidents and operational problems that might accrue after service launch, efficient and effective incident and problem management process will guarantee fast service

recovery and solving the problem from the root by making deep investigation to know the root cause and hence put the required preventive actions. Survey data showed that 77% of IT professionals advised that their IT organizations have incident/problem management, 10% no and 13% don't know, the survey also showed that 71% of IT professionals rate this process as excellent or good. Based on this result; it's necessary to revise this process and put required corrective actions that enhance the efficiency and effectiveness of this process and actually this will be taken into consideration in proposed IT service delivery framework. The below figure illustrates IT professional's opinions about the efficiency and effectiveness of incident/ problem management process

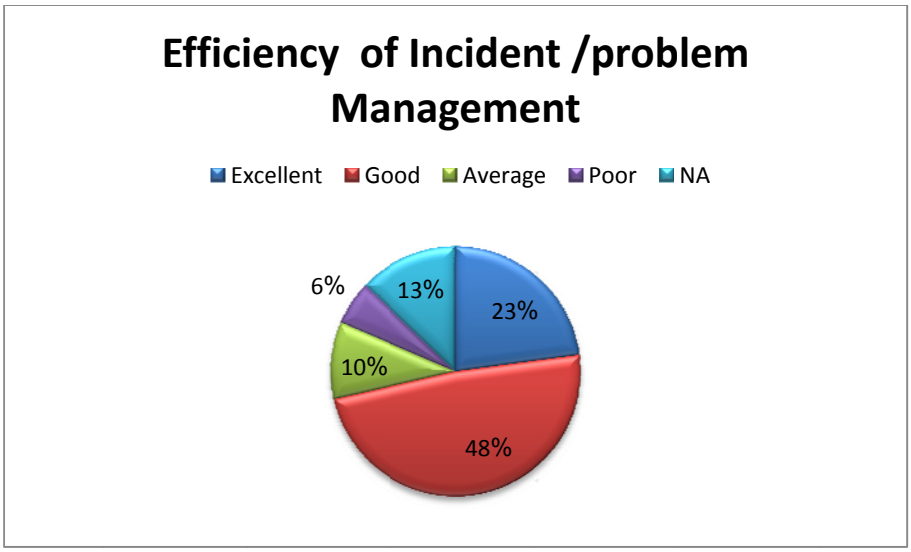


Figure 5.10: Efficiency of incident /problem management

The most important asset for IT organization and even for any organization is information; and accordingly keeping such valuable asset secured and within confidentiality level will protect organization from information

leakage that might be utilized by unauthorized parties. Access management process guarantee that information will be exposed only to authorized persons. Survey data showed that 81% of IT professionals advised that their organizations have incident/problem management process but only 69% advised that access management process is excellent or good, this implies that such process needs to be revised deeply since its related to security and data confidentiality which might cause damage at all levels of if critical information is exposed to non authorized parties. Below figure illustrates the efficiency and effectiveness of this process according survey results

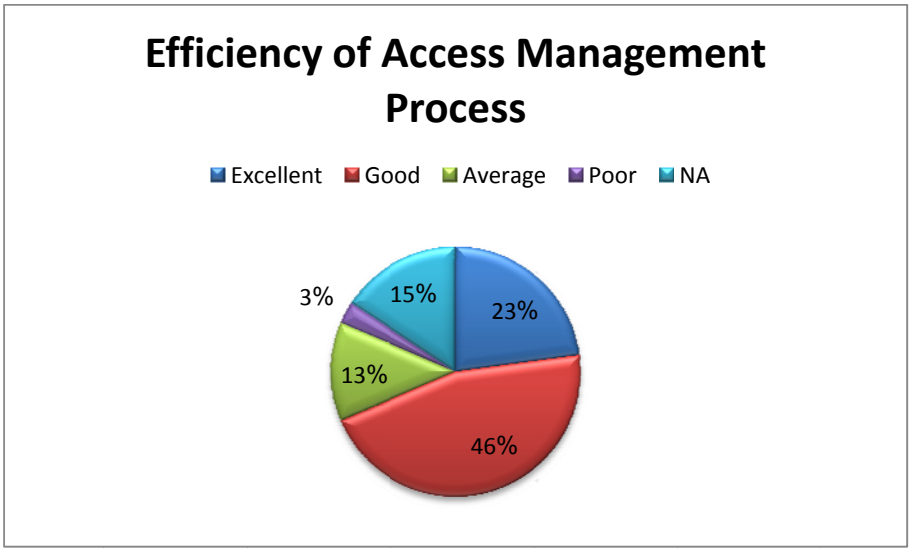


Figure 5.11: Efficiency of access management process

Responding to incidents that might affect provided IT-based services is reactive method, it's necessary to work proactively to discover potential errors before they happen. With good monitoring process, such potential errors that might cause service failure can be discovered in early stage and

hence avoid service failure or interruption. Survey date showed that 84% of IT professionals advised that their IT organizations have service monitoring process, 10% advised no, while 6% don't know if their organizations have such process in place or not. The below figure illustrates these findings according to survey

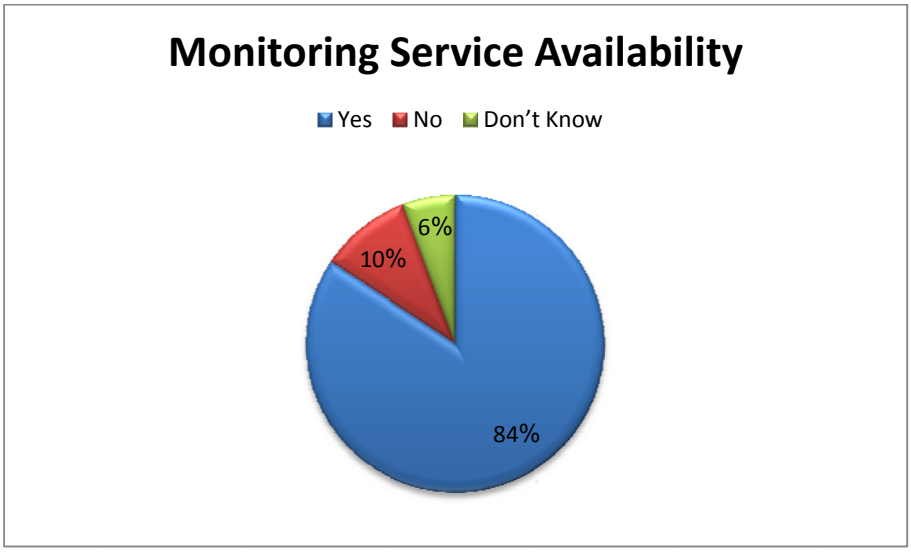


Figure 5.12: Monitoring service availability

Help desk unit is considered the first line support for customers, they call this unit to register trouble tickets at the moment of facing problem when they enjoy using the service, helpdesk as a front office directly interact with customer, and it is a key factor for customer satisfaction. Survey results showed that 88% of IT organizations have helpdesk unit, however; 84% of IT professionals advised that helpdesk function is effective and efficient, this is good indication but should be enhanced as much as possible by training, awareness, and solid helpdesk process. The below figure

illustrates helpdesk function efficiency and effectiveness according to survey.

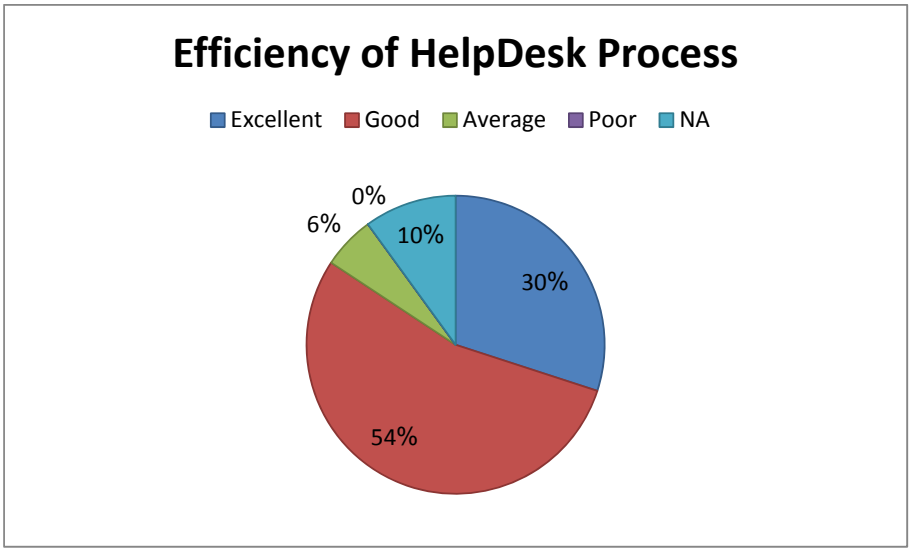


Figure 5.13: Efficiency of helpdesk process

The survey data showed that 64% of IT professionals advised that their IT organizations have IT audit process, while 42% advised that role of IT audit is excellent or good as being illustrated in the below figure. It's necessary for IT organizations to establish unit or part of unit that perform IT audit since this will enhance all aspects of IT service delivery across the service lifecycle.

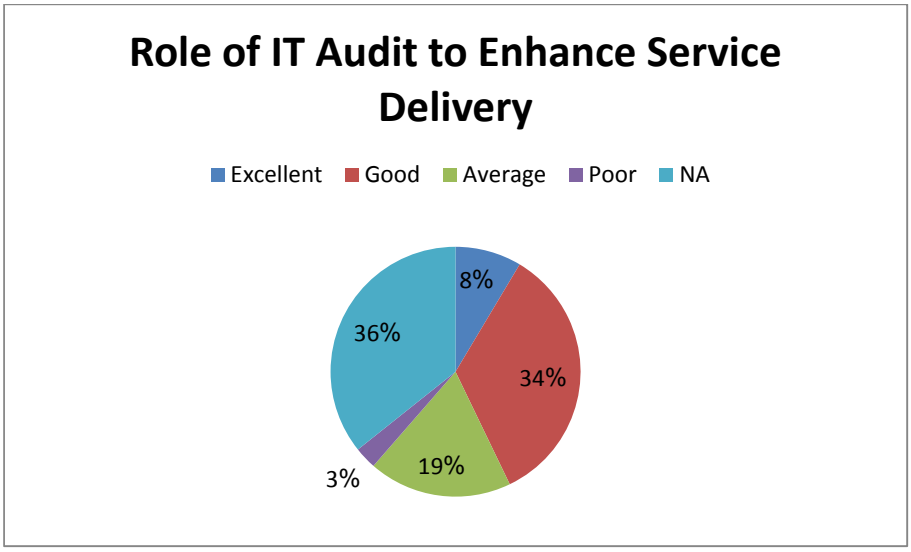


Figure 5.14: Role of IT Audit to Enhance Service Delivery

Continual Service Improvements process (CSI) provides required actions for maintaining and improving value for customers through periodic review of products or services in order to achieve better design and smooth operation of delivered services. Survey results showed that 67% of IT professionals advised that their IT organizations have such process. Based on these findings, it's necessary for all IT to adopt such process to keep good position in the market and retain and acquire more customers. Below figure illustrates these findings according to survey

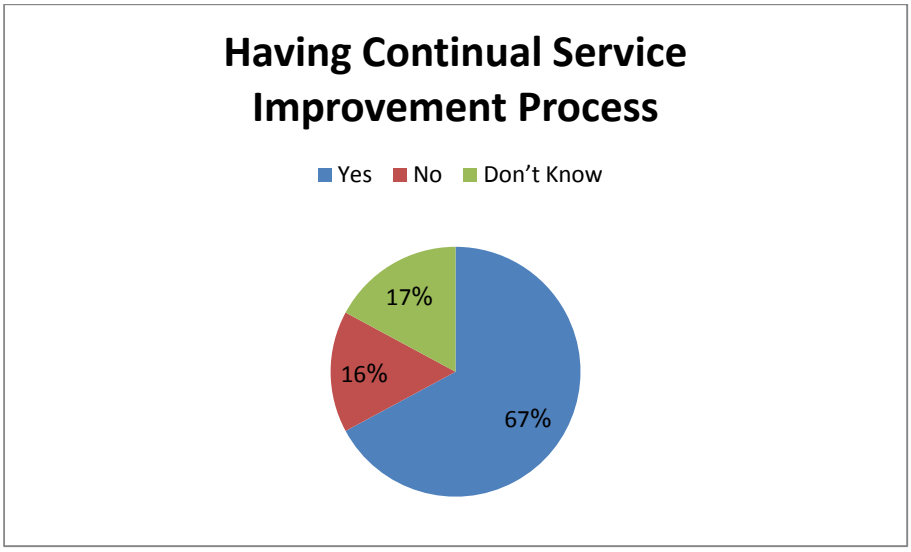


Figure 5.15: Having Continual Service Improvement Process

Customer satisfaction is a key indicator for quality of delivered IT-based services, so it's important for all organizations that wish to keep competitive position with large customer base to pay attention to this vital process, based on survey data, 59% of IT professionals advised that their IT organizations measure customer satisfaction, this percentage should be enhanced to better one if IT organizations want to keep their competitive position in the market.

The below figure illustrate these findings according to survey results

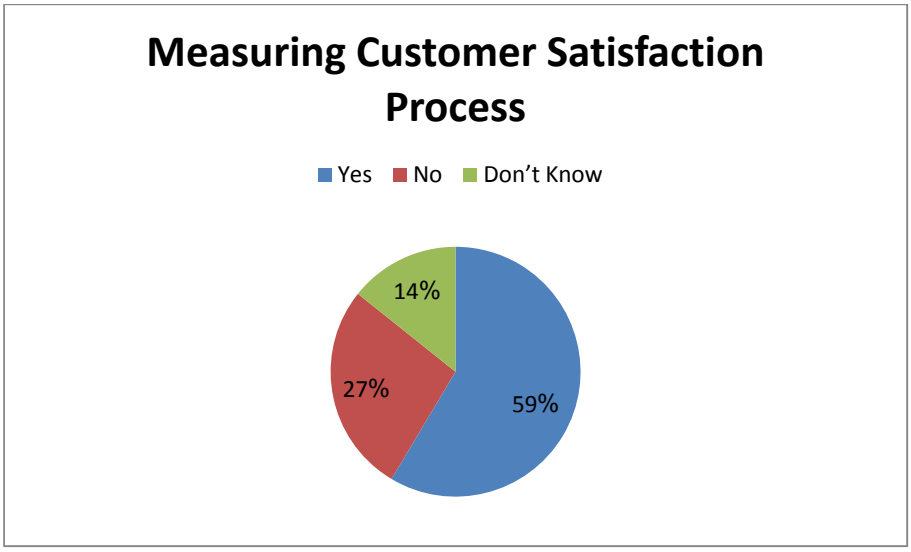


Figure 5.16: Measuring Customer Satisfaction Process

5.3.1. Addressed Issues Based on Survey Finding

Based on literature review and survey results and analyses, below table lists the main issues that should be taken into considerations when building proposed IT Service Delivery Framework .

Table: 5.7: Survey Main Findings

#	Issue
1.	Alignment between business strategy and service strategy should be enhanced, only 66% of IT professionals advised that such alignment is exist.
2.	Involvement of IT department during service concept development should be enhanced to get better alignment between business functions and IT and hence better service development and delivery
3.	Majority of IT organization lack of systematic services delivery process , only 44% of IT professional advised that their organizations adopt IT frameworks
4.	No clear phases for product or service development
5.	Requirements collection methodology needs enhancement to be more efficient and effective
6.	Service Level Agreement (SLA) with customer (internal or external) should be clear, efficient, and effective
7.	Most of IT organization don't build solution architecture
8.	No clear change request process for developed product or services
9.	Testing methodology is weak and should be more efficient
10.	Handover product or service to operation team should be managed through clear handover process.
11.	Incident/ problem management should be enhanced to be more effective and efficient
12.	Role of effective IT audit is absent on most of IT organizations
13.	Measuring customer satisfaction should be adopted in all IT organizations that deliver IT service to their customers.

5.4. Interviews Results and Analysis

Based on literature review, and survey results, the researcher conducted semi-structured interviews with six of IT seniors who have long experience in information technology, the interviews were conducted over a period of one week to discuss their opinions in person. Before starting the interview, the researcher introduced himself and clarified the objectives of the interview .The researcher used open-ended questions that some of them already prepared before interviews, and other questions raised during interviews. During the interviews; the researcher wrote down notes about the opinion of interviewee about discussed issues, then after all interviews finished; the researcher analyzed responses based on main subjects listed below that discussed IT service delivery process adopted by Palestinian IT organization:

- Organization business and service strategies
- Service design process including assessment and implementation
- Adoption of standard or framework for service management/delivery.
- Service level Agreement (SLA)
- Quality Standards, testing and Quality Assurance process
- Change request process
- Hand over service to support team
- incident/problem and access management process
- IT auditing mechanism

Before showing interviews results, it's necessary to draw the reader's attention that discussions with interviewees reflect their opinions and not necessarily opinions of their organizations.

When asking IT seniors about service and business strategies and alignment between them; most of interviewees agreed that such alignment is not as should be, this might be related to the fact that no clear specializations in the companies and IT market is relatively small, as some of them advised. They also advised that business sometime put targets without consulting IT or figuring out IT associated capabilities, others advised that alignment is existed to some extent in large organizations.

About IT involvement in early stage of product or service development; the majority of interviewees agreed that no clear and systematic process in most companies, they also advised that culture plays a vital role in this regard, and business team sometime looks at IT as implementer only. This look in researcher's opinion is totally wrong and should be changed by awareness about the benefits of involvements of IT in the early stage to avoid later misunderstanding as well as such involvements will expedite the process of service development.

When asking about IT service delivery standards or frameworks; it was obvious that no wide adoption of IT service delivery frameworks in Palestinian IT organizations, most of interviewees agreed that the cost, lack of local implementers, absence the effective role of IT governors, and required training are among the main constrains of IT frameworks

adoption, in addition to the fact that IT organizations here in Palestine are relatively small and no available resource to manage and maintain adoption of such standards or frameworks. Some of them advised that its necessary for IT managers to clarify the benefits of IT frameworks adoption to senior management to get support in this regard, in the same context, many of workers in this field think that such frameworks may add constrains to their job, so they prefer to work without such constrains. From this point; it's necessary to adopt awareness programs that highlights the benefits of IT frameworks so that IT professionals and business team can accept that and change their culture in this regard.

With respect to product or service development phases, it was obvious that no clear and systematic process in place, interviewees advised that such phases are existed in large organizations, and need improvement in small ones.

Assessment process for new products or services is very important, most of interviewees advised that such process is existed but need improvements and there is a desire for that, but still not mature, other interviewees advised that some IT organizations adopt such process from other international organizations because they are partners for them.

When discussing service level and Service Level Agreements (SLA), some of interviewees advised that there is demand for that, but in most cases such SLA just on paper and not effective because of culture and absence of

penalties, so it's necessary to look at SLA as a tool for enhancing service quality not only for documentation or even penalties.

Most of interviewees agreed that adoption of quality standards needs a lot of resources; this include cost, training, and management support. They advised that many of companies that adopt quality standard have got funding from international organizations and donors and this is actually true to some extent, the issue here is to clarify the benefits of quality standards to senior management so that they adopt them even without the availability of funding from nongovernmental organizations (NGOs) or donors.

When finishing design, it's now a time for building products or services, some of interviewees advised that IT organizations adopt methodologies and process from international companies that they are partners to them, other interviewees advised that this process needs proper planning, other advised that IT professionals sometime are forced to complete implementation within short period of time and hence they don't follow systematic process under the pressure of time.

Change request process is needed especially when business team needs to make change in delivered products or services; interviews results showed that this process still needs improvements in most of IT organizations, only presents clearly in large organizations. The proposed framework in the next chapter suggest simplified process for change request that can be adopted by any Palestinian IT based organization regardless of its size.

Most of IT companies do testing and kind of quality assurance, but sometime by trial and error process, it's not systematic and needs improvements as most of interviewees advised.

Once product or service is implemented, it's necessary to make handover for operation and support team before going live, most of IT organizations have such process, but needs improvements and maturity according to interviews results.

Incident/ problem management is important to deal with unexpected failures of service when it's in production environment, because fast service recovery reduces losses and customer complaints, according to interviews results, most of IT organizations need to revise this process and move from fire fighting mode to systematic mode. The proposed framework in the next chapter suggests effective process in this regard.

Information is one of most important assets for any organization including IT-based ones, so; access managements should be effective and efficient so that no one can access critical information expect who is authorized, interviews results showed that most of IT organizations have process in this regard, but there no 360 degree access management process in place. This needs deep understanding of information classifications that are supported by tools to manage access.

Service monitoring is a proactive method to discover potential errors and try to fix them, interviews results showed that most of IT companies practice system monitoring, not service monitoring. Here; it should be

noted that services might depend on many system, if one system down; this might affect service availability. It's necessary to set monitoring process that covers all service dependencies in a holistic view.

With respect to IT auditing, interviews results showed that most of interviewees advised that such audit is outsourced from external companies based on business owners and shareholders request, sometime this happen when discovering problems that leads to data or money losses, in this regards its necessary to adopt continuous internal IT audit, not occasional or seasonal one and to include application, systems, and security as clarified by Moeller (2010).

It's not enough to launch services, it's necessary to keep enhancing these services continuously, interviews results showed that most of interviewees believe that this process is existed, but need enhancements, and this is subjected to allocated budgets and resources.

Customer satisfaction is a key indicator for IT organization's success, interviews results showed that most of interviewees agreed that such process adopted in large organizations and to some extent in small ones, but not systematic and need improvements. From this point it's necessary for IT organizations to get customer's feedback from time to time to know weaknesses and strength of provided services.

5.5. Summary

The researcher has adopted mixed method approach to collect and analyze data; where focus group and semi-structured interviews were used as

qualitative method and survey was used as quantitative methods. the researcher invited a group of professional to half-day brain storming session to figure out and understand the current situation of IT service delivery process in Palestinian IT-based organization, the group had identified many issues that should be addressed regarding IT service delivery, these issues include alignments of service strategy with business strategy, project management skills, end-to-end service delivery process, unclear requirements, weakness of testing methodology as clarified earlier in this chapter. The findings of focus group along with literature review were used by researcher to design survey to pull the opinions of IT professionals about IT service delivery process that is adopted by Palestinian IT organizations. The survey results and analysis showed that alignment between business strategy and service strategy should be enhanced, and showed also that majority of IT organizations lack of systematic service delivery process, no clear phases for product or service development, and requirements collection methodology should be more efficient and effective; these findings are actually aligned with focus group findings. To make kind of validation, the researcher conducted interviews with six of IT seniors, and discussed with them IT service delivery, the results of interviews almost are aligned with results of survey, this is a clear indication that addressed problems almost existed and should be treated, actually this is what the next chapter will suggest, Palestinian IT Service Delivery Framework (PSDFW).

Chapter 6

6. Palestinian IT service Delivery Framework (PISDF)

6.1. Overview

In the previous chapter, the researcher has analyzed data from three sources, focus group, survey, and semi-structure interview, the results of analysis showed that service delivery for Palestinian IT based organizations has many problems that should be addressed and taken into consideration when building proposed framework. This chapter introduces the proposed Palestinian IT Service Delivery Framework (PITSDF) that based on international framework; Information Technology Infrastructure Library (ITIL).The main objectives of PITSDF is to provide Palestinian IT organizations with a simplified IT service delivery framework that is cost effective and easy to implement and at the same time fits Palestinian IT organizations needs in term of providing systematic process follow for IT service delivery throughout service lifecycle .

PITSDF will dramatically simply IT service delivery because it's based on international standard, so no need to reinvent the wheels and build a framework from scratch. PITSDF based on ITIL framework in term of structure, main processes, and associated roles, in this framework many roles are combined together to be played by one personnel as well as many processes are combined together to fit organization size.

In Palestine most of companies are small-to medium(SME)size , PITSDF is built based on ITIL bust customized in term of simplifying many processes to fit SME companies here in Palestine, this also leads to dramatic impact on implementation cost , because complicated processes need completed resources in most cases, and hence more implementation and operation cost.

6.2. Why ITIL?

The following are the reasons behind choosing ITIL framework to build PITSDF:

- ITIL is the most famous IT framework around the world
- ITIL is based on best practices
- Redundancy of application and management tools that based on ITIL
- Redundancy of training material
- Flexible framework that allows organization to customize processes
- ITIL suitable for all types of IT companies

6.3. IT Service Delivery Parties

Before going inside PITSDF, its necessary to know the involved parties in the service delivery process, below is a list of those parties:

- Customer: requester of the service and usually is the functional department like marketing, customer care, human resource, sales, or end user, etc.

- Project and Demand Management (PDM): which represents the Project Management Office (PMO) for IT, this unit inside IT represents the interface between customer (other functional department) and IT sections. The main function of this unit is end-to-end project and demand management for all IT projects, this include –but not limited- handling all change requests from all customers and manage them with internal IT entities.
- IT Sections: which represent internal sections that are responsible for service design, implementation, and operations of products and services from IT perspective?
- Supplier: This represents any external product/service providers or consultancy firms.
- End user, the consumer of the service.

6.4. Palestinian IT Service Framework (PITSDF)

PITSDF framework is formulated based on deep analysis of problems of Palestinian IT organization service delivery process. The researcher adopted solid methodology which combines qualitative and quantitative methods to understand and analyze the current situation of IT service delivery in Palestinian IT firms. Focus group as qualitative method was used to identify strength, weaknesses, opportunities, and threats of IT service delivery, then based on focus group findings, the researcher conducted survey to pull the opinion of IT community about IT service delivery process. Based on focus group and survey findings, the researcher

conducted several semi-structured interviews with IT seniors to discuss deeply IT service delivery and to validate findings of focus group and survey. The findings of data analysis along with literature review helped the researcher to formulate PITSDF. This framework is derived from the most famous international framework which is Information Technology Infrastructure Library (ITIL) and consists of five key service areas that represent service management lifecycle. These areas are service strategy, design, transition, operation, and finally continual service improvements. As kind of validation, PITSDF is discussed with IT seniors how have solid experience in IT domains and they provided positive feedback about its fitness to Palestinian IT firms. The below diagram illustrates to the reader high level view of PITSDF.

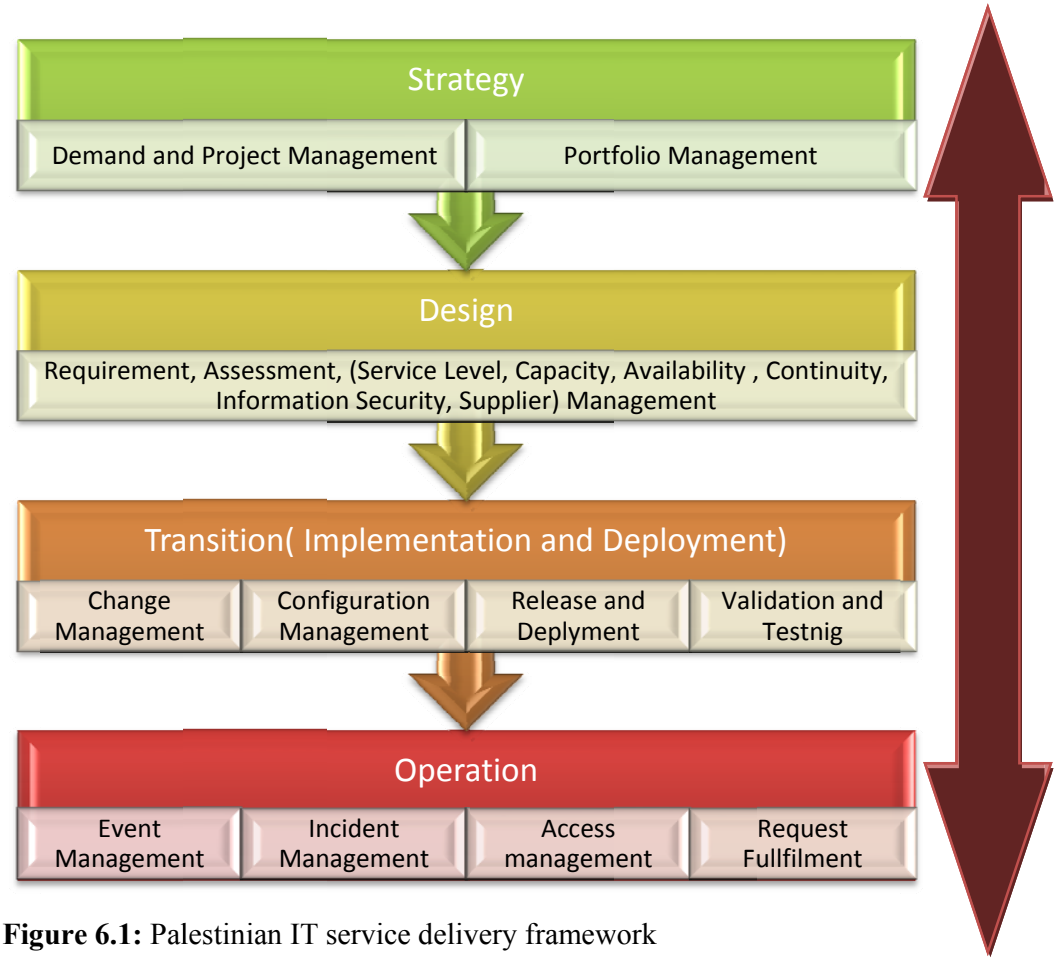


Figure 6.1: Palestinian IT service delivery framework

6.4.1. PITSDF Service Strategy

IT service strategy for any service provider should be based business strategy, from this point it's necessary for IT to participate with other business functions in formulating strategies and long term objective of IT-based organization.

IT strategy should participate with business functions to define service market and service offering, it also should identify service structure, service portfolio, and resources and capabilities of IT. Such participation will guarantee alignment between IT and business strategies.

According to Farenden (2011) IT should take the following questions into consideration when formulating IT strategies:

- What service should IT organization offer and whom
- How IT organization will differentiate itself from competitors
- How to create value to customer
- What is the key aspects for service quality
- What policies and procedures, and resources that should be in place to achieve strategic objectives
- What is the required resources (people, processes, financial) that should be in place to achieve strategic objectives

In order to manage service strategy, the PITSDM framework includes a new functional unit named Project and Demand Management (PDM) which is responsible for applying and executing IT strategies in cooperation with other IT and business functions, this unit also responsible for end-to-end IT project and demand management.

Service Portfolio Management

ITIL service strategy ver.3 (2007) describes service portfolio management as a dynamic method for governing investment in service management, it enables IT organization to manage services as a complete set. Service Portfolio management consists of two parts, the first one is the service pipeline which is a set of services currently approved by approval

committee to be designed and the second part is the service catalogue which is a set of services that already launched or waiting to launch.

Service portfolio includes valuable information about IT service, such information include:

- Service name and description
- Services Usage
- Target customer category
- Status of the service (under development, built, launched, or retired)
- Resources used to operate the service

According to Farenden (2011), service portfolio management enables IT organization to manage services and hence help decision makers to make investment decisions, prioritize investment, manage resources, and approve moving service from phase to phase across the service lifecycle.

PITSDF framework put portfolio management under the responsibility of Project and Demand management unit clarified earlier in this section.

Project and Demand Management (PDM) Objectives:

PDM is the function that will be responsible for IT service strategy; the objectives of this unit are listed below:

- PDM will handle all strategic issues related to IT in coordination with other business functions; this unit will provide solutions for

alignment problems between IT service strategy and business strategy.

- PDM unit will also handle the process of end-to-end project management for all IT projects.
- PDM will handle demand management and treat all business requirements and change request starting from initial phase of concept development up to service launch.

Project and Demand Management (PDM) Key Responsibilities:

The suggested PDM unit has the following key responsibilities:

- Service Portfolio management which consists of two parts, the first one is service pipeline which is a set of services currently approved by approval committee and the second part is service catalogue which is a set of services that already launched or waiting to launch.
- Demand and relationship management to handle business change request and needs.
- Cooperate with other business functions to formulate IT and business strategies.
- Participate in defining processes and procedures that govern IT functions.
- Scoping, scheduling, and set priorities for business requests.
- Support aspects of the business cycle including proposals, feasibility studies, implementations, and new business development

- Anticipate research, identify, and develop solutions to customer problems.
- Set Service Level Agreements (SLA) with IT customers (internal or external) to mutually agree on their expectation.
- Mange continual service improvements for delivered products or service in cooperation with other IT and business functions.

Project and Demand Management (PDM) Key Roles:

In PITSDF; the following key roles are necessary to execute service strategy and manage IT projects and business demands.

- Demand Management Manager (DMM)

Demand Management Manager is responsible for establishing business relations with customer either internal or external, and responsible for understanding business and customer requirements, it works closely with business and IT functions.

- Project Manager (PM)

Key responsibilities of PM include developing and managing services across the service development life-cycle; this includes responsibilities of design, transition, and handover service to operation team.

6.4.2. PITSDF Service Design

After understanding service strategy and set of services to be implemented according to service portfolio, the next step is to design the service. Service Design is focusing on designing services according to business needs, it includes design principles and methods that will be used to convert strategic objectives into services, this include- but not limited to- design the required processes to support the service lifecycle, solution design, service level management, and forming Service Design Packages (SDP) which is usually produced for new or changed services according to Brooks (2010).

Before clarifying PITSDF Service Design, it's useful to draw attention to service design aspects. According to ITIL Service Design ver.3 (2007), five aspects of Service Design should be taken into considerations:

- The design of the services, including all of the functional requirements, needed resources and capabilities that agreed between IT and business functions.
- The design of service management systems and tools, especially the Service Portfolio for management and control services through their lifecycle
- The design of the technology architectures and management systems required to provide the services
- The design of the processes needed to design, transition, operate, and improve the services.

- The design of the measurement methods and metrics of the services.

Key Service Design Activities

Service Design includes many activities; however, below is the key ones:

- Requirements collection, analysis and engineering to ensure that business requirements are clearly documented and agreed with business functions.
- Design product or services along with required processes to meet business requirements
- Review and revision of all processes and documents involved in Service Design, including design, plans, architectures and policies.
- Production and maintenance of IT policies and design documents, including designs, plans, architectures and policies
- Risk assessment and management for designed products or services

PITSDF Design Processes

PITSDF includes set of processes for designing new product or enhancing currently implemented one. The following diagram illustrate PITSDF processes that based on ITIL ver. 3

Figure 6.2: PITSDF design processes

Requirements Collection

After receiving concept document from business side or customer in term of concept document, the process of requirement collection continues to identify all aspects related to customer needs, this include the nature and themes of required service, expected outcomes, reporting, service scalability and availability, service level agreement. These requirements are received via PDM unit to be inspected if it complies with adopted process in term of document format and preliminary approvals, and then these requirements will be forward to design team to do assessment.

Assessment Process (Feasibility)

After collecting requirements from functional department; it's now the time for assessing these requirements in term of feasibility. The requirements document contains risk and concerns and design dependencies like dependencies on third-parties. After completing assessment, the document sent back via PDM to business function for approval or modifications, if the requirements along with assessment approved from advisory board, then the service is ready for design. During this stage; the PDM unit manages service level requirements, inquiries, clarifications, and delivery date between customer (business function) and design team.

Service Level Management (SLM)

This process is focusing on designing Service Level Agreement (SLA) with business units or customer and IT based on service requirements to ensure that such required service level is in place by monitoring and evaluation.

SLM ensures that IT and customer (internal or external) has a clear understanding of the level of service to be provided. This can be done by defining and documenting service level aspects like required time to recover service in case of failure.

Capacity Management (CM)

One of most important aspects for any service is the required capacity that meets current and future business needs. Capacity management is focusing of service dimensioning and mapping this dimensioning with required

resources and tools to provide service like required hardware, software, license, and manpower to operate and maintain service.

Availability Management

Availability management is focusing on designing IT infrastructure, process, and tools that is necessary to provide required service availability, for example if business requirement dictate that email service should be available 24/7/365 days, then IT must design high available service that meet such business requirements. In this context it should be noted that availability management is negotiated during setting up service level agreement (SLA) that based on business requirements.

Continuity Management

Continuity management is focusing on providing the IT services in case of risk or disasters that affect service availability and must be recovered as soon as possible within agreed SLA with business or customer, it includes aspects of disaster recovery and contingency plans.

Information Security Management

Information security management is focusing on confidentiality, integrity, and availability of information to be aligned with IT organization security guidelines, processes, and procedures. Information security management ensures that information is available and usable when required and protected against unauthorized access.

Supplier Management

According to ITIL Service Design ver.3 (2007), "*The goal of the Supplier Management process is to manage suppliers and the services they supply, to provide seamless quality of IT service to the business, and ensuring value for money is obtained*"

The main objectives of this process are to manage relationship with suppliers, negotiate and agree on contracts, and ensure that contracts are aligned with business needs.

Supplier management activities include:

- Identifying external suppliers according to business needs
- Supplier evaluation (credibility, support, prices, etc)
- Contracts negotiations
- Service Level Agreement (SLA)

PITSDF Service Design Key Roles:

The following key roles are necessary to execute service design phase:

- Service Design Manager

Key responsibilities of Service Design Manager include:

Overall management of service design and ensure that all service design processes are reflected in service design practices. It also has the responsibility of ensuring that all design documents meet business requirements, and finally monitoring and measuring service design efficiency and effectiveness.

- IT Planner

Key responsibilities of IT planner include –but not limited - develop plans, coordinate with all related parties to ensure smooth implementations of these plans, review IT costs periodically to be aligned with allocated IT budgets ,identify external and internal factors that affect implementation of IT plans and put proper actions, and finally review IT performance and put actions for improvements.

- IT Designer / Architect

Key responsibilities of IT Designer/Architect include –but not limited to- overall service design aspects, ensuring that design is compliant with service strategy and meet customer needs, translating logical design to physical design taking into account business requirements and related processes.

In PITSDF those roles can be covered by available resources, for example IT manager can play the role of service design manager, and professional engineers can handle the role of IT designer.

6.4.3. PITSDF Service Transition

After approving design of new product or service, now it's a time to handle it by implementation team who is responsible for building, testing, and releasing the service, which called sometimes service rollout, the PITSDF includes set of processes for service transition that based on ITIL Service Transition ver.3 (2007)

Transition Phase Activities

PITSDF Service Transition process includes activities to put plans for implementation, manage resources that are required to build solution, testing and release the solution to production environment .The major activities includes:

- Plan and prepare release
- Build and Test solution
- Service testing and pilot (if pilot is necessary)
- Deploy to production or retire from operations
- Review and close service transition

According to ITIL Service Transition ver.3 (2007), the set of documents that are required to implement the services include:

- Service specifications
- Solution architecture
- Design details like how each component is connected with others, and workflow of service
- Testing plan
- Release and deployment plan

Change Management:

After completing service design, it's now a time to reflect this design on physical environment and the initial step is the change management which ensures that all changes are recorded and authorized. Change Management

process in PITSDF is represented mainly by change request from business side. According to ITIL Service Transition Ver.3 (2007), the primary objective of Change Management is to enable beneficial changes to be made with minimum disruption to IT services. In this regard it should be noted that there are two types of changes:

- Standard change (business as usual change) such as enhancements for products or services
- Emergency change that should be done as quality as possible because it may have impact of production services

Change management process interacts with all service delivery processes across the service lifecycle.

The seven Rs of change management

According to ITIL Service Transition Ver.3 (2007), the seven Rs of change management are:

- Raised : who raised the change
- Reason : what is the reason for the change
- Return : what is the finical or business return form this change
- Risk : what is associated risk of this change
- Resource: what is the required resource to implement this change
- Responsible: who is responsible for implementing this change

- Relationship: what is the relationship with other changes

It should be noted that Change Management process is directly related to other processes in PITSDF, it's related to service strategy and service design from one side and service operation from the other side since the change is based on business requirements and of course has impact on service operations.

Request for Change (RFC)

Request for change is part of change management where business or customer requests for change in the service, usually RFC is initiated by customer (functional department), its logged by IT department, validated by design and implementation team, signed off by both customer and IT responsible before applying it into production environment, then it should tested, and finally implemented in the life environment

The following diagram illustrates the process of request for change (RFC)

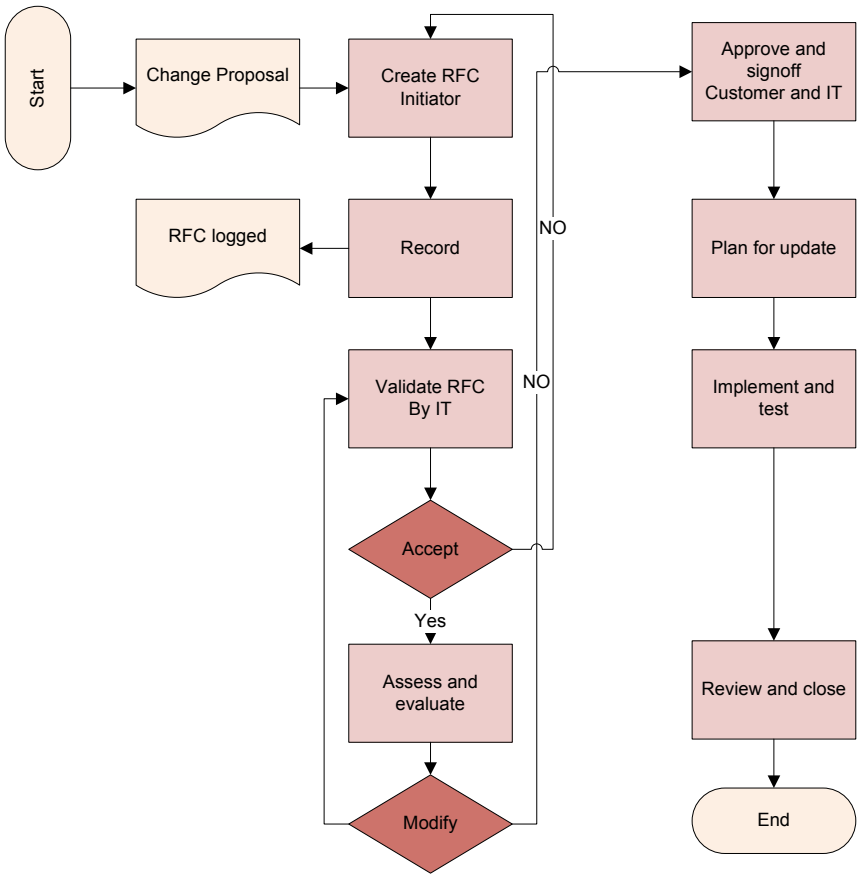


Figure 6.3: Request for Change Process

Configuration Management

Configuration management is focusing on all aspects of configuration items within information system; these configuration items (CI) include software, hardware, and even documentation. Configuration management interacts with other service delivery process across the service life cycle like change management and capacity management.

According to ITIL Service Transition Ver.3 (2007); Configuration Management is used to "*Identify, control, record, report, audit and verify service assets and configuration items, including versions, baselines, constituent components, their attributes, and relationships"*. It also includes all required attributes for each configuration item (CI), and usually stored in Configuration Management System (CMS). According to ITIL Service Transition ver.3 (2007), Configuration management system may include the following attributes:

- Unique identifier for each CI
- CI type, software, hardware , process
- Name/description of CI
- Version (e.g. file, build, release) of CI
- Supply date and supplier name
- License details, e.g. expiry date
- Owner/custodian/administrator
- Status (in production, stopped, retired,)
- Supplier/source

- Related document masters
- Related software masters
- Historical data
- Relationship type with other CIs
- Applicable SLA with customer or vender

Deployment and Release Management (DRM)

Release and Deployment Management process is focusing on managing releases to build, test, and deliver services specified by Service Design that will meet business requirements and intended objectives. DRM interacts with other service delivery processes across the service lifecycle, for example it interacts with change management process to check, validate, build, and authorize release according to change request process that based in business requirements.

Proper planning for service release guarantee smooth and on time service delivery to production environment, so; it's recommended to use testing environment to check and validate release if its outcomes comply with requirements or not.

The main steps of deployment and release services in PITSDF are:

- Prepare release and deployment plans that are approved during change management.
- Build and test product or service testing environment if it exist.

- Planning pilots to test product or service behavior on small community before rollout if that necessary.
- Rollout product or service to whole service community.

Product or service release usually organized in form of road map, where each product has its own roadmap. The following diagram illustrates sample of product or service roadmap in PITSDF.

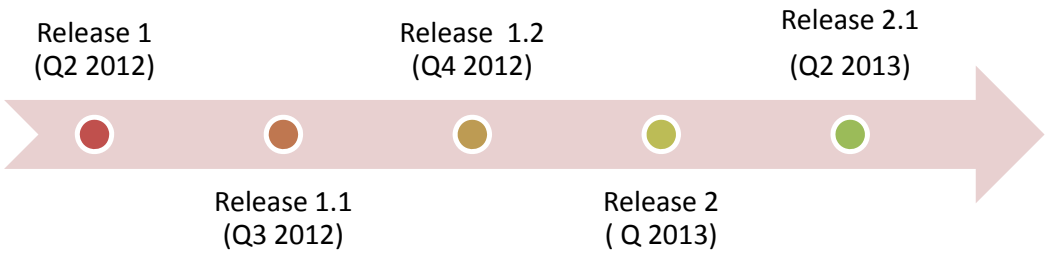


Figure 6.4: Product/Service Roadmap

Service Validation and Testing

Validation and testing of new or changed product or service is vital step in service transition, since it will affect service operation dramatically if has not been done properly. The implications of improper testing may lead to service interruptions and downtime in form of incidents. It may also lead to increase complaints of customer and hence customer dissatisfaction and incurred losses for IT organization.

The main objectives of validation and Testing are:

- Plan and implement solid testing scenarios the cover all service components.
- Quality assurances that validate if the product or service is comply with original business requirements.
- Discover defects or bugs along with other issues that prevent service launch.

In PITSDF validation and testing is classified into two parts, technical and user testing

- Technical Testing (Provisional Acceptance Testing, PAT)

  Verifies that the specified capability is provided according to business requirements, it focuses on technical aspects of provided services which are hidden from end user or customer like testing interaction of internal service components with each other, systems and platforms capabilities, capacity, and availability.

- User Acceptance Testing (UAT)

  UAT Verifies that the service complies with business requirement and specification and focuses on service from the user perspective

  UAT tests are defined in the UAT test specifications which are developed from the business requirements specification. Additionally, UAT not only verifies that the products and services that the customer

will use, but also the associated business processes, organisational structure and supporting systems.

Typical testing scenario covers the following parts:

- Service functions and usability testing
- Accessibility and availability testing
- Performance, capacity, and resilience testing
- Volume, stress, load; and scalability testing
- Compatibility testing

PITSDF Service Transition Key Roles:

The following key roles are necessary to execute Service Transition phase, it should be noted that such roles can be covered by other IT personal who is currently holding other roles:

- Service Transition Manager

Responsible for overall all planning and management of service transition phase, this includes managing all aspects related to changes and change requests, configuration, testing, and deployment. In small organizations like Palestinian ones, the role of service transition manager can be covered by IT manager, Professional Services Manager, or Operation Manager.

- Service Engineer

Responsible for configuring, testing and deploying required changes and configurations on testing and production environment.

- Testing Specialist

Responsible for writing and executing testing scenarios and overall quality assurance aspects to ensure that products or service meet business requirements.

6.4.4. PITSDF Service Operation

After the service is designed and implemented in a production environment, it's now a time to keep this service up and running according to business needs and within agreed Service Level Agreement (SLA), this is the role of Service Operation. According to ITIL Service Operation ver.3 (2007), Service Operation includes guidelines on achieving effectiveness and efficiency in the delivery and support of services to ensure service stability and maintain the service value for both customer and the service provider. The main processes of PITSDF service operation include event management, incident management, access management, and request fulfillment.

Key Service Operation Activities

The main activities of Service Operations are:

- Monitoring and control platforms and access management.
- IT operations including system, network, and application configuration.

- Infrastructure management including servers, network, and application.
- Request fulfillment to handle all customer request and complaints.

PITSDF Service Operation Processes

- **Event Management**

According to Farenden (2011), the purpose of event management is to manage events throughout their lifecycle, this lifecycle includes the activities that detect events, investigate them, and then take the proper action to fix them. ITIL ver.3 defines an event as "*any detectable or discernible occurrence that has significance for the management of the IT infrastructure or the delivery of IT service*".

Event can be classified to many levels but usually they are classified to informational, warning, major, and critical.

In PITSDF Event Management process, the event is detected by monitoring systems or tools; and based on significance, the proper trigger will be activated, if the event is informational then its logged for later review by administrator, and if it's an exception, other processes will be triggered like incident management that and will be discussed later in this chapter. Event notifications might be sent to responsible person by email or SMS if the system supports such functionality.

The following diagram illustrates PITSDF Event Management process

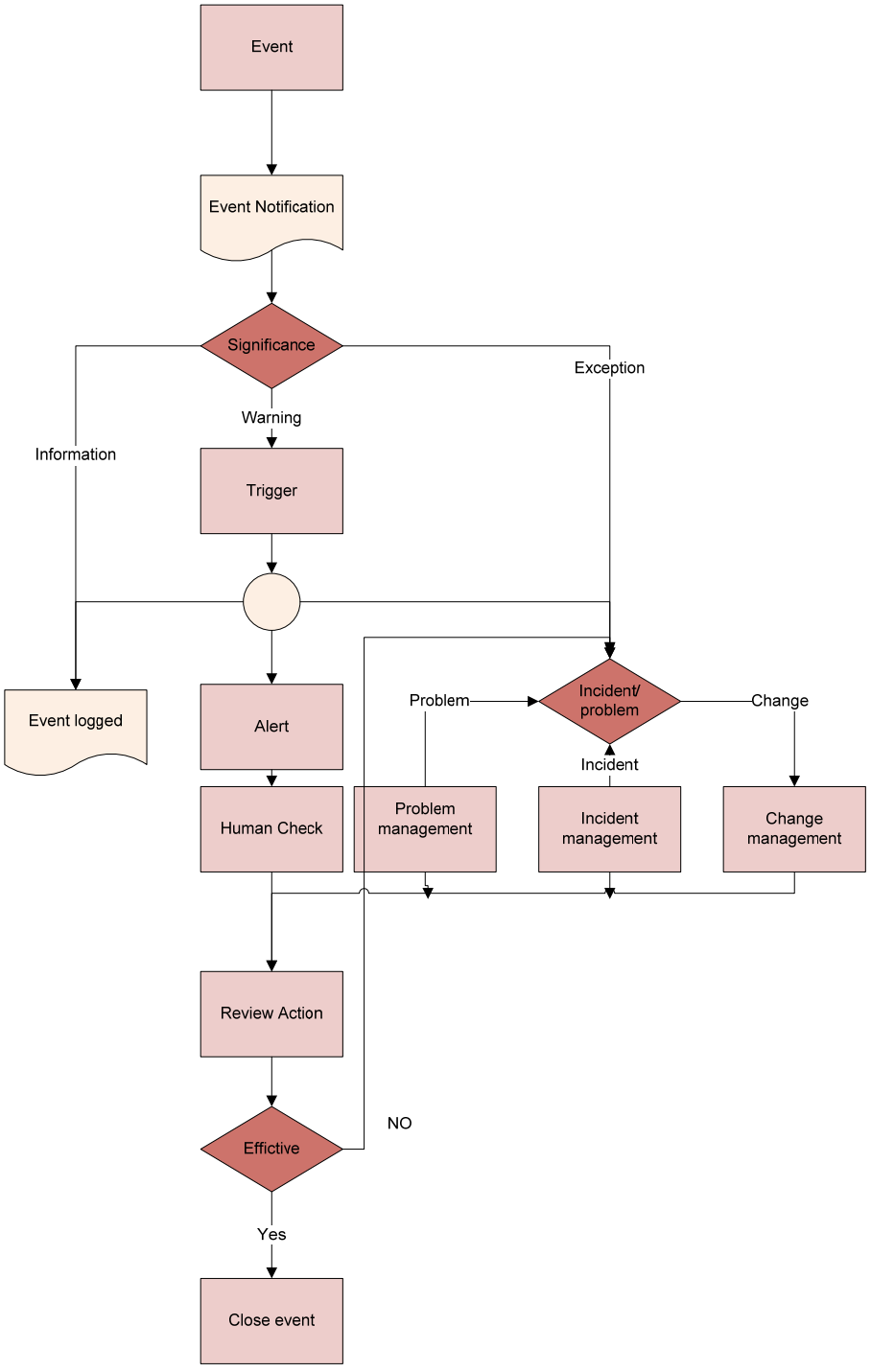


Figure 6.5: PITSDF Event Management

- **Incident Management**

According to ITIL Service Operation Ver.3 (2007), an incident is unplanned interruption to an IT service; it can be reduction in quality of IT service, or failure on component. The main objective of incident management process is to recover IT service as quickly as possible and minimize impact on business operations.

In PITSDF Incidents are classified to minor, major where minor incident affect service partially like poor performance, or delay in service response, where major represents a significance disruption to the business. The below diagram illustrates PITSDF Incident Management process.

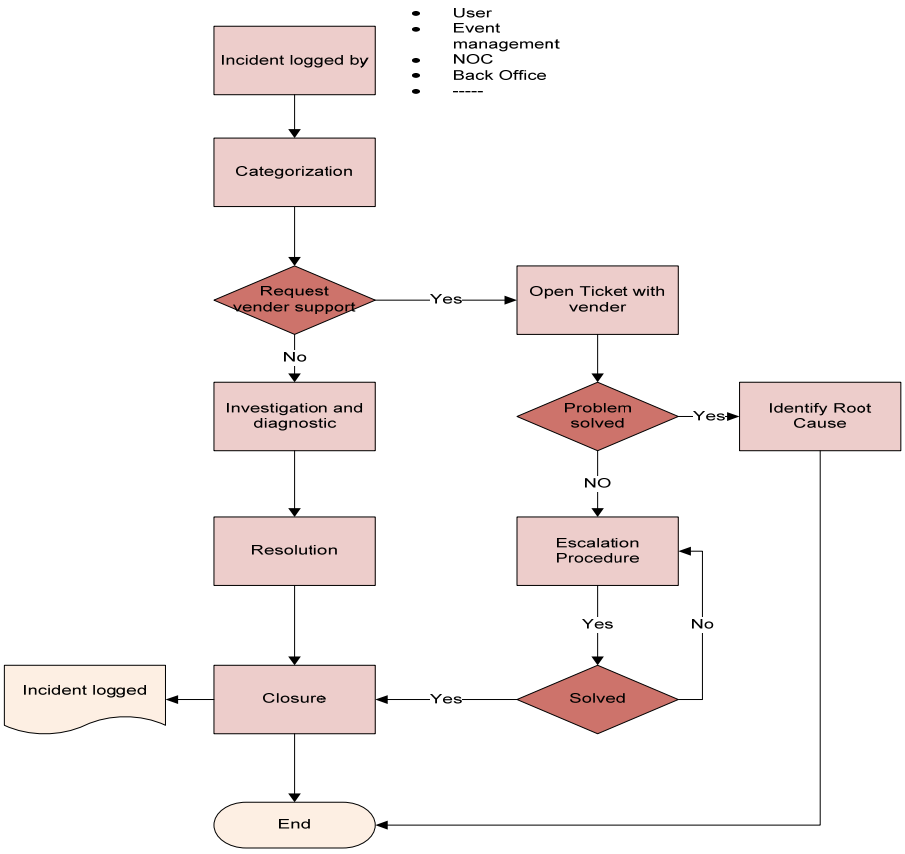


Figure 6.6: PITSDF Incident Management process

- **Access Management**

Access Management process is focusing on granting authorized users the right access to use IT service, at the same time preventing non authorized users from accessing it. Access management interacts with other processes like Information Security Management that has been clarified in service design phase. During service design; the information security process put the aspects in information confidentiality, integrity, availability, then in operation phase the aspects will be reflected on IT service delivery components like access to application, systems, and services.

According to ITIL Service Operation Ver.3 (2007), access can be triggered by one of the following:

- Standard request form that are approved by all related parties
- Request for Change
- Service Request submitted via the Request Fulfillment System

Access management is not focusing only on granting or preventing access according to information security management process, but it also responsible for verifying, logging, and monitoring access continuously. The access management lifecycle in PITSDF includes:

- Requesting access via forms, RFC, or HR Management System
- Verification if this access is approved and complied with information security management policies.
- Providing proper rights within required time and date.

- Monitoring identity status continually to discover up normal behavior.
- Logging and tracking access.
- Removing or restricting rights based on access management process identified below.

The following diagram illustrates PITSDF access management process

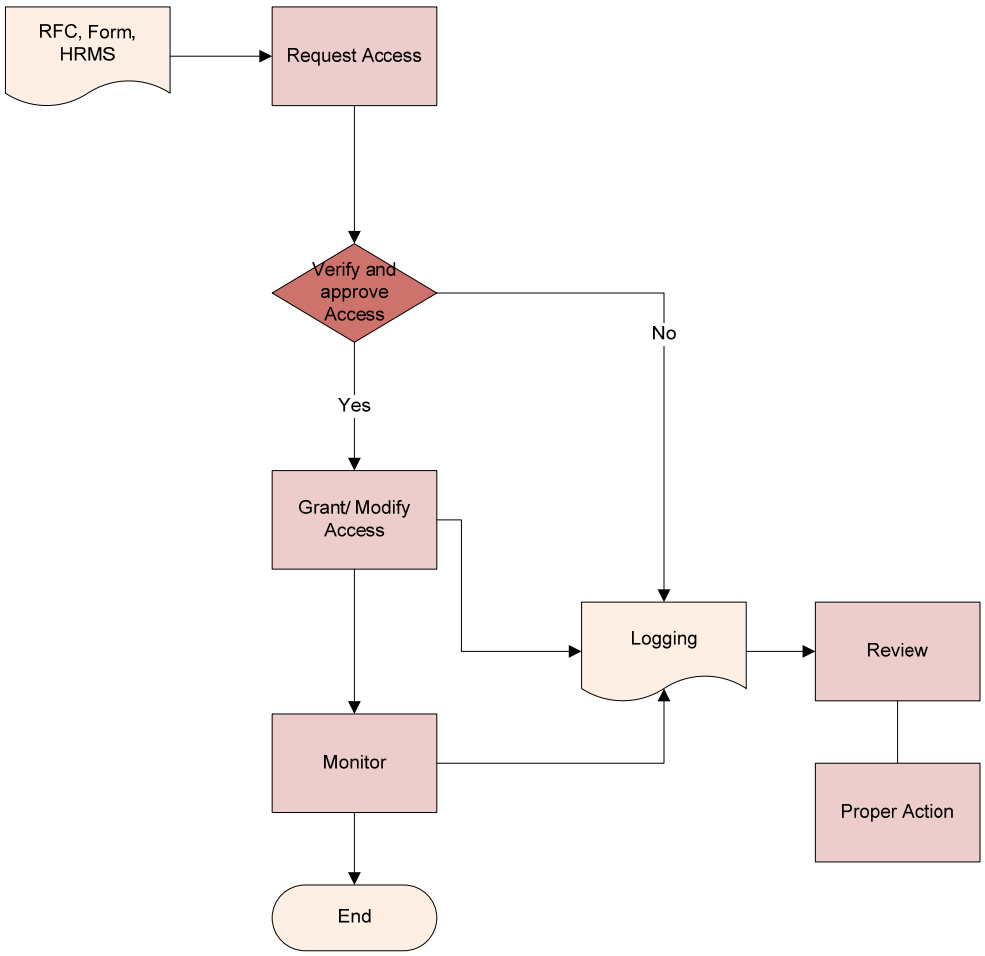


Figure 6.7: Access management process

- **Request Fulfillment**

Request Fulfillment process is focusing on dealing with customer requests, such request might be information, or request for change like change password. Such requests are placed by user on service request system, where users submit their request and service desk handle this request according to predefined SLA.

The following figurer illustrate PITSDF request fulfillment process

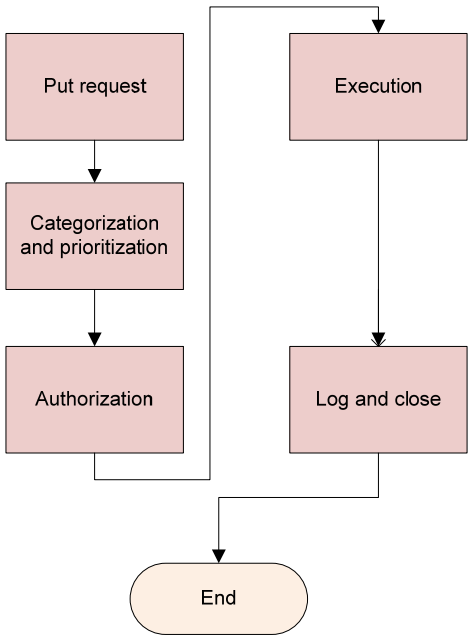


Figure 6.8: PITSDF Request Fulfillment process

PITSDF Service Operation Key Roles:

The following key roles are necessary to execute service Operation, it should be noted that such roles can be covered by other IT personal who is currently holding other roles especially for small IT organizations.

- Operation Manager

  Manage overall services day to days operations, mange operation team and their needs including training, awareness, and required roles and experience to streamline operations, and finally report senior management about the activities and constrains

- System Administrator

Responsible for managing and administering all platforms under his responsibility, this includes new configuration, patching and upgrade, backup and restores data.

- Service Desk Manager

Manage overall service desk function including request fulfillment, act as a escalation point for request that passed SLA, arrange service desk activities and shifts to guarantee smooth service desk operation, and finally responsible for reporting senior management about service desk activities, constrains, and any other function reports.

- Service Desk Technician

Responsible for handling customer service request within requested service level agreement (SLA).

6.4.5. PITSDF Continual Service Improvements (CSI)

Continual Service Improvement provides guidelines for maintaining and improving value for customers through periodic review of products or services to achieve better design and operation of services. According to Cartlidge (2007), CSI includes the 7-Step improvements process that PITSDF CSI is based on. CSI as it name imply is a continuous process to evaluate and addresses changes in requirements, strategies, market, technology and any other internal or external factors.

The primary purpose of CSI is to keep alignment of IT services with business needs by periodic review of delivered IT services. This can be done by reviewing, analyzing and recommending improvements for IT services currently in production environment and at the same time reviewing IT service capabilities that will directly enhance service quality such as staff training and process reengineering.

It should be noted that CSI process covers all service delivery processes throughout service lifecycle; all processes are subjected to continual improvements to improve service quality and at the same time reduce unnecessary cost of IT service delivery without scarifying service quality.

Continual Service Improvements (CSI) Activities

The main activities of CSI include:

- Reviewing management information and trends to ensure that services are meeting agreed Service Levels and the output of the enabling IT service delivery processes are achieving the desired results
- Periodically conducts assessments for in place processes, roles and activities that have been used for IT service delivery and identify weaknesses and work on enhancing them and identify opportunities and exploit them.

Seven-Step Improvement Process

The steps of this process are:

- Identify Strategy, Vision, and goals (Plan)

The first step is to establish the context for what is the plan, this begin with strategy, vision, and technical and operational goals

- Define what should measure (Plan)

Based on vision, strategy and goals, IT should define key aspects of what to measure, for example service level management.

- Gather Data (Do)

Setup a methodology to gather data such as reviewing report, process observation, interviews, survey .etc.

- Process Data (Do)

Process Data using proper tools to be ready for analyses

- Analyze Data (Check)

After data collection, it's now the time for analyzing these data to know where the strengths, weaknesses, opportunities, and threats are.

- Present Data (Check)

Present data in the forms of graphs, tables in a report; this will be easier for busy senior management and customer to digest such reports

- Corrective Actions(Act)

The time for taking decisions and proper actions that will enhance IT service quality.

The following diagram illustrates PITSDF CSI that based on seven-step improvement process

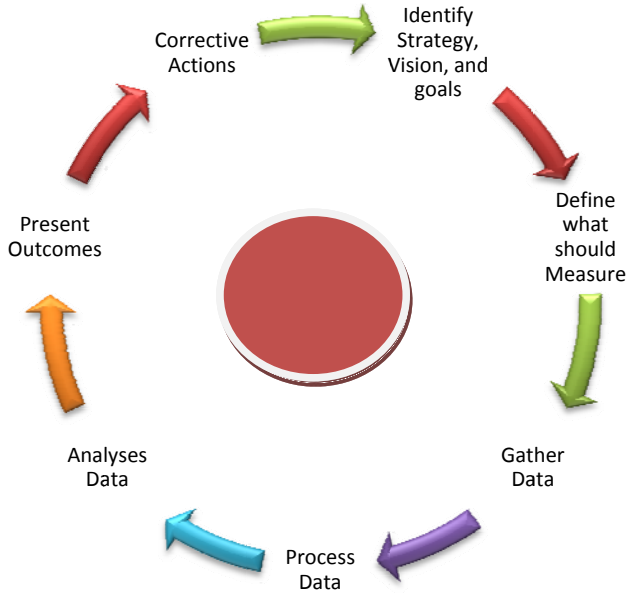


Figure 6.9: seven-step improvement process

The responsibility of CSI is the whole IT organization since this process related to all processes across the service lifecycles; however the project and demand management function described above in this chapter can lead CSI process management along with support of all other functions.

6.4.6. PITSDF Closer Look

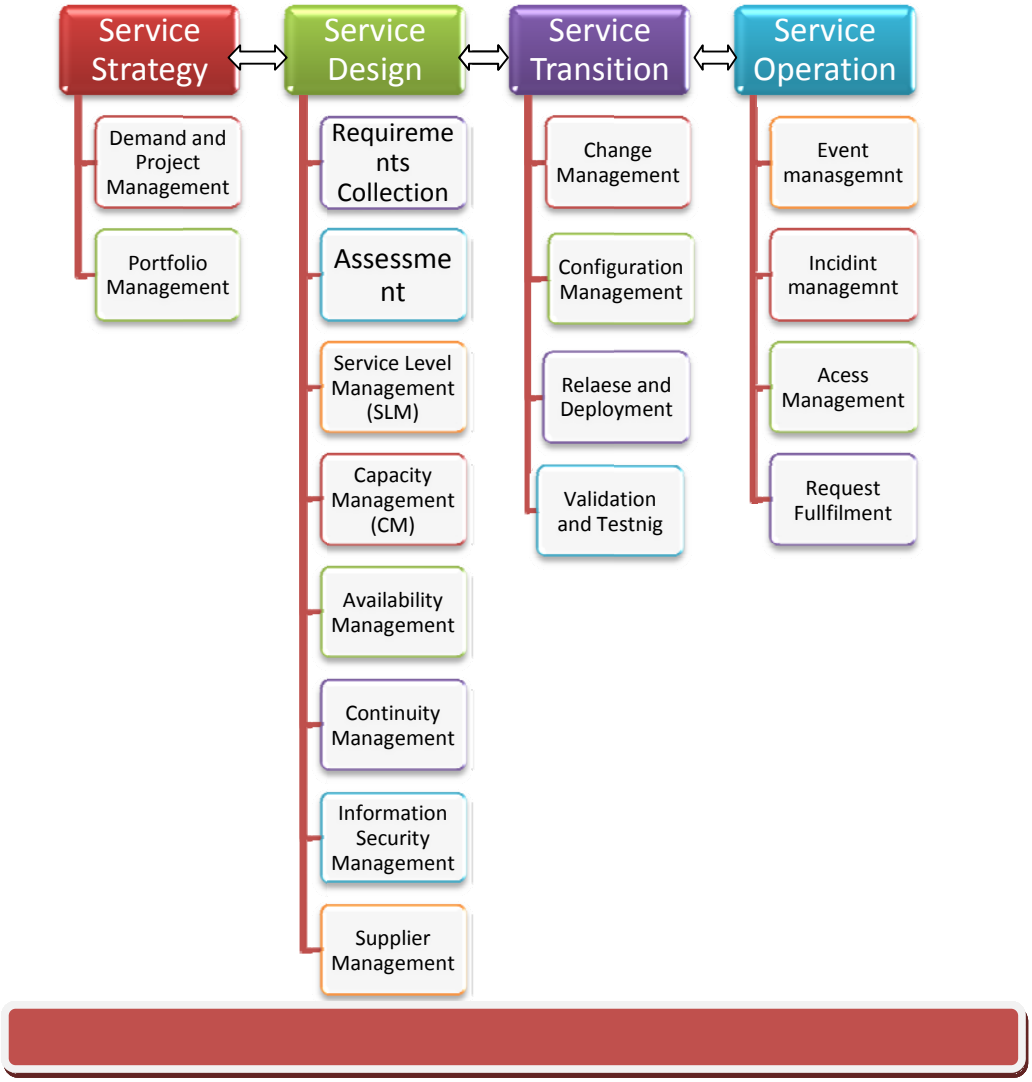


Figure 6.10: PITSDF Closer Look

6.5. Summary

IT service delivery within required quality, cost, and time is critical success factor for IT organization, from this point it important to pay attention for IT service delivery by reviewing currently in place processes and enhancing them to achieve IT key performance indicators. The Palestinian (PITSDF) framework aims to provide Palestinian IT organizations with a simplified IT service delivery framework that is cost effective and easy implement and at the same time fits Palestinian IT organizations needs in term of providing systematic process follow for IT service delivery throughout service lifecycle.

PITSDF is consisted of five key service areas, which are service strategy, design, transition, operation, and finally continual service improvements.

PITSDF Service Strategy covers all strategic activities of IT organization; it includes three major processes which are demand management, portfolio management, and project management.

PITSDF Service Design covers all aspects and processes related to service design, this phase include requirement collection and handling, assessment, service level management, capacity management, availability management, continuity management, information security management, and finally supplier management. Once the service is designed, then it will be ready for implementation and this is handled by PITSDF Service Transition.

PITSDF Service Transition processes include activities to put plans for implementation, manage resources that are required to build solution, testing and release the solution to production environment. The processes in this stage are change management, configuration management, deployment and release management, and finally validation and testing. Once the service is implemented, verified, deployed and tested, it's now the time for launching the service; this means that the service will be in the hands of PITSDF Service Operation.

PITSDF Service Operation handles services in production environment and ensures that such services are up and running according to business needs and within agreed Service Level Agreement (SLA). The main processes of PITSDF Service Operation are event management, incident management, access management, and finally request fulfillment.

It's not enough to launch the service, but it's necessary to improve this service continuously, this is the role of PITSDF Continual Service Improvements (CSI). PITSDF CSI is interacting with all process across the service lifecycle, where each process is subjected to Seven-step improvement process. PITSDF adopt seven-step improvements process along with Diming Cycle for quality improvements that based on plan-do-check-ack. PITSDF is recommended to be adopted by Palestinian IT based organizations because it's simple, cost effective, and the most important thing that this framework is designed for Palestinian IT organizations based

deep analysis for their needs and at the same time treat their IT service delivery problems.

Chapter 7

7. Conclusion and Recommendations

7.1. Introduction

There are no doubts that IT services are increasing rapidly nowadays, hence; the nature, shape, and process of IT service delivery in terms of quality, performance, and cost are key success factors for IT organizations. from this point, it's necessary to focus on IT service delivery and address strengths and leverage them, weaknesses to fix them, opportunities to exploit them, and threats to mitigate them. This research is a unique experience that addressed IT service delivery in Palestine with a hope for enhancement and improvement through its deliverables and finding, and through its simplified and cost effective service delivery framework (PITSDF). This research has opened the door for other initiatives and endeavors to pursue in developing and improving IT service delivery in Palestine.

7.2. Conclusions

7.2.1. The Problem, Methodology, and Data Analysis Outcomes

Palestine is directly affected by global trends of technological advances and revolution of information technology, as a result; the concept of IT-based services becomes clear in several service sectors like banking, stock exchange, telecommunications, and internet services. Palestinian IT sector -

due to political conditions- is relatively new and has lot of challenges and problems in its development path. This research is an ambitious initiative that addressed the problems of Palestinians IT service delivery with the main goal for more organized and streamlined IT service delivery. Constrains that limit the Palestinians IT organization from adopting international standards or frameworks are justified to some extent, the sector is relatively new and the region still developing dramatically, the lack of experience in IT service management frameworks along with adoption cost are among these constrains. From this point; this research aimed to organize, and govern Palestinian IT service management by building framework that is based on ITIL international framework but simplified, cost effective, and the most important thing is that framework fits Palestinian IT organizations.

To understand and analyze the problems of Palestinian IT services delivery, the researcher adopted mixed method (qualitative and quantitative) approach where focus group is used to understand the problem qualitatively, and the based on finding, a survey was conducted to pull the opinion of IT community quantitatively, based on survey finding, the researcher back to qualitative approach and conducted several semi-structured interviews with IT seniors to investigate findings of the survey.

Based on analyses of mixed method approach and literature review, the researcher addressed the major problems of IT service delivery here in Palestine. It was obvious that there is no clear alignment between business

strategy and IT service strategy for IT organizations, at the same time, no clear end-to-end service delivery process, unclear requirements, weakness of testing methodology, unclear phases for product or service development, and requirements collection methodology should be more efficient and effective. Results of focus group, survey, and semi-structured interviews are almost aligned which indicate that the addressed problems almost existed and should be treated.

7.2.2. The Solution

To treat the problems of Palestinian IT organizations service delivery that clarified throughout this research, the researcher based on literature review and data analysis findings has built Palestinian IT Service Delivery Framework (PITSDF) that has taken into consideration current problems of IT service delivery in Palestine. The framework is based on well known international framework; ITIL. PITSDF framework aims to provide Palestinian IT organizations with a simplified IT service delivery framework that is cost effective and easy implement and at the same time fits Palestinian IT organizations needs in term of providing systematic process follow for IT service delivery throughout service lifecycle.

PITSDF is consisted of five key service areas, which are service strategy, design, transition, operation, and finally continual service improvements.

PITSDF Service Strategy covers all strategic activities of IT organization; it includes three major processes, demand management, portfolio management, and project management.

PITSDF Service Design covers all aspects and management processes related to service design, this phase include requirement collection and assessment, service level, capacity, availability, continuity, information security, and finally supplier management.

PITSDF Service Transition processes include activities to put plans for implementation, manage resources that are required to build solution, testing and release the solution to production environment. The management processes in this stage are change management, configuration management, deployment and release management, and finally validation and testing.

PITSDF Service Operation handles services in production environment and ensures that such services are up and running according to business needs and within agreed Service Level Agreement (SLA). The main processes of PITSDF Service Operation are event management, incident management, access management, and finally request fulfillment.

PITSDF Continual Service Improvements (CSI) is continuous process that interacts with all process across the service lifecycle, where each process is subjected to Seven-step improvement process. PITSDF CSI adopts seven-

step improvements process along with Diming Cycle for quality improvements that based on plan-do-check-ack.

7.3. Recommendations:

Based on data analysis and findings, the research recommends the below remedial and permanents recommendations to be taken into consideration by IT key players, decision makers, and senior management of Palestinian IT organizations:

- IT organizations should pay more attention to IT service quality, line management should address key issues that affect service quality and put proper plans for improvements, however; senior management support is a key success in this regard.
- It's recommended for IT mangers with cooperation of HR to conduct awareness programs about the benefits of IT service delivery frameworks, such awareness will help dramatically in accepting and adopting such frameworks.
- It's recommended for IT organization to focus on project management skills for senior employees by conducting training programs in this regard; this will have positive impact on IT service delivery in term of quality, performance, time, and cost.
- It's very important to keep good relationships with suppliers, at the same time, IT organizations should put effective and efficient service level agreement (SLA) with them to ensure that suppliers are

committed to their deliverables on time not just on papers, this will dramatically enhance IT service delivery especially when time to market is an issue.

- IT key players, public or private, governmental and nongovernmental, should pay more attention and support to IT service delivery through conducting various development programs in this regard.
- It's necessary for business development team in any IT-based organization to involve IT team in any early stage of product or service development, this will keep alignment between business and IT functions, however; senior management is responsible to leverage such involvement.
- It's recommended for IT organizations to establish unit, part of unit, or even role for IT auditing to address IT related weaknesses and submit recommendations in this regards, of course this will enhance all aspects of IT service delivery process across the service lifecycle
- Its good opportunity for government and local nongovernmental bodies to open development projects for IT service delivery taking the advantage of funding from international donors like other funded projects in other fields.
- It's recommended for IT organization to conduct customer satisfaction survey from time to time to pull the opinion of customers

about provided services and hence put proper plans for required improvements.

- Business decision makers and senior management should involve IT in formulating organization strategy such as business targets and service offering, this will help IT to investigate capabilities that are needed for service delivery.
- It's recommended to establish awareness programs to limit ICT brain drain to outside, these programs should be supported by finicial and non financial incintives, the presence of such brians here in palestine will help dramatically in enhancing IT serivce delivery.
- Its recommended to implement PITSDF in some of IT organizations to see results in reality and address its strengths and leverage them and weaknesses to treat them, however this an appeal for IT key players to lead this initiative.

7.4. Future Works

This research is considered a good milestone to investigate, develop, and enhance IT service delivery, however; it will open the door for other initiatives and endeavors to pursue in developing and improving IT service delivery in Palestine especially from the following dimensions:

- Implement PITSDF in some of IT organizations to see results in reality and address its strengths and leverage them and weaknesses to

treat them, however this appeal for IT key players to lead this initiative.

- The effect of cultural aspects in Palestinian IT service delivery firms starting from awareness programs to accept change toward IT formworks adoption up to implementation and practices
- Occupation policies, practices, and constrains and their effect on IT service delivery
- Challenges of Small to Medium (SME) Palestinian IT firms including legal , political, and technological challenges
- The effective role of IT key Player to govern and control IT and IT service delivery.

References

Alford (2006). **Frameworks for IT Management**. UK.Van Haren

Ayyub and McCuen (2003**). Probability, Statistic, and Reliability for Engineers and Scientists**, 2nd edition. Chapman & Hall/CRC

Bazeley (2002**) . Issues in Mixing Qualitative and Quantitative Approaches to Research**: University of Economics and Business Administration, Vienna, 2002.

Bryman (2006) . **Integrating quantitative and qualitative research: how is it done?.**University of Leicester

Brooks (2010) . **Service Design Package (SDP): A Practical design for a Service Portfolio**. itSMF International.

Cartlidge (2007) . **An Introductory Overview of ITIL V3 .** The UK Chapter of the itSMF.

Cisco Systems (2009). **An Introduction to eTOM**. Available from http://www.cisco.com/en/US/technologies/collateral/tk869/tk769/white_paper_c11-541448.pdf .Accessed: April 2012]

Clerc (2004). **IT Service Cmm: A Pocket Guide**. Van Haren Publishing.

Dawson (2002). **Practical Research Methods**, **A User-friendly Guide to Mastering Research Techniques and Projects**, How To Books Ltd.

Farenden (2011). **ITIL for Dummies 2011**.UK: Wiley

Hyder (2010). **eSroucing Capability Model for Service Providers(eSCM-SP).**US:Van Haren publishing.

IT Governance Institute (2007). **CoBIT 4.1 Excerpt Framework Executive Summary**. Available from www.itgi.org . Accessed [February 2012].

ITIL Service Design ver.3 . (2007) . Volume 2 of ITIL Series . Great Britain. The Stationery Office .

ITIL Service Operation ver.3 . (2007). Volume 4 of ITIL Series . Great Britain. The Stationery Office .

ITIL Service Strategy ver.3. (2007).Volume 1 of ITIL Series . Great Britain. The Stationery Office .

ITIL Service Transition ver.3. (2007).Volume 3 of ITIL Series . Great Britain. The Stationery Office .

ITSMF IT Service Management Forum (2012). **What roles are required for an effective service catalog** ? . Van Haren publishing.

Kajornboon (2005). **Using interviews as research instruments**. Chulalongkorn University.

Lacy (2011). **ITIL Managing Digital Information Assets** . The Stationery Office .

Marquis. **ITIL v3: What It Is and Why You Should Care**. Available from http://www.itsm-library.com/Documents/itil_v3_what_it_is_and_why_you_should_care_.pdf . Accessed [April 2012]

Moeller (2010**). IT Audit, control, and Security**. Wiley.

Merriam Webster. **Quality definition**. http://www.merriam-webster.com/. Accessed [March 2012].

Tricker (2006). **The Quality Management Process**. Van Haren Publishing

OGC (2007). **ITIL Lifecycle Publication Suite**. UK:Stationery Office

Oleson (2009). **Achieving IT service Quality: The opposite of Luck**. Synergy Book.

Palestine Chapter of the Internet (ISOC.PS). **About ISOC Palestine**. Available from http://www.isoc.ps/old/about_e.php . Accessed [February 2012].

Palestine ICT Incubator PICTI, **About PICTI**. Available from http://www.picti.ps/Default.aspx?portalid=1&cpage=%7e%5cDefault.aspx&tabid=53&tabindex=0&lang=en&mid=0&itemid=0&verno=0&pino=0&pvno=0&pl=en&page= . Accessed [February 2012].

PCBS, Palestinian Central Bureau of Statistics (2008). **Business Survey on ICT, 2007: Main Findings. Ramallah – Palestine.**

PCBS (2011) . **Household Survey on Information and Communications Technology, 2011: Main Findings**. Ramallah - Palestine.

Palestinian IT Association PITA. **PITA members list**. Available from http://www.pita.ps/newweb/memberslist.php . Accessed [January 2012].

Palestinian National Internet Naming Authority, PNINA. **About PNINA**. Available from http://www.pnina.ps/2010/05/welcome-to-ps-domain-space/ . Accessed [March 2012]

PITA (2009). **The Palestinian ICT Sector, A Three-Year Outlook…Based on Economic Indicators** .Ramallah-Palestine

PITA (2008). **Assessment of the Palestinian ICT Workforce -2008**. Ramallah-Palestine

PALTRADE(2010).**Challenges Facing ICT in Palestine**.Ramallah. Palestine

Peter Wheatcroft (2007). **World Class IT**. The British Computer Society. Swindon. UK

Ragin (1987). **The comparative method: Moving beyond Qualitative and Quantitative strategies**. Berkeley: University of California Press.

Rathnam(2005). **Alignment Of Business Strategy and IT Strategy: A Case Study Of A Furtune 50 Financial Services Company**. Journal of Computer Information Systems. Winter 2004-2005

Rozemeijer (2007). **Frameworks for It Management: A Pocket Guide**. Van Haren Publishing

Semi-structured interview, Available from http://www.westlothian.gov.uk/media/educationdocs/researchsemiinterviewdoc .Accessed [March 2012].

Slem (2008). **ISO/IEC 2000 introduction**. Van Haren publishing.

Spratt & Walker & Robinson (2004). **Mixed research methods**. Commonwealth of Learning.

Stucki (2004). **IT Service CMM, a pocket guide**. Van Haren publishing.

Strategic Counsel. **Research Methodologies**. Available from http://www.thestrategiccounsel.com/qualitative-quantitative-research Accessed [March 2012].

Tallon (2008). **A Process-Oriented Perspective on the Alignment of Information Technology and Business Strategy**.Journal of Management Information Systems / Winter 2007–8

Tashakkori and Teddlie (2003). **Handbook of mixed methods in social and behavioral research**. Thousand Oaks: Sage Publications.

Thomas (2003). **Blending qualitative and quantitative research methods, in thesis and dissertation**. Sage publication

University of California SANTA CLUZ (2003). **IT Service Delivery Vision**. Available from http://its.ucsc.edu/transformation/news_and_events/presentations/Vision_Report.pdf [Accessed: January 2012].

Wheatcroft (2007). **World Class IT**. The British Computer Society. Swindon. UK

Zorn. **Designing and Conducting Semi-Structured Interviews for Research**. Waikato Management School, available from http://wmssoros.mngt.waikato.ac.nz/NR/rdonlyres/em25kkojrnxofpq3j7avsnl46vkmera63kk2s6nd5ey2pypoxs32ne7dykntjde4u2qhffhpol6bzi/Interviewguidelines.pdf . Accessed [February 2012].

Appendices

Appendix 1: Survey Questions Form

Dear Sir / Madam

Appreciate your kind help to fill below questionnaire, it will not take more that 10 minutes of your valuable time, your opinion is very important since it will help to enhance IT service delivery in Palestine.

The purpose of this survey is to identify if there is a clear service delivery methodology adopted at your esteemed organization; all information of this survey will be used for research purposes and will not be used for any other purpose.

Many thanks in advance

Student: Qutaybah Adel Khwayrah

PART One : General Information				
Age :	_____		**IT Position**	_____
Gender:	_____		**Address:**	_____
Company Name	_____		**City:**	_____
Company Employee Size	Less than 20	☐		
	21 - 50	☐		
	Greater Than 50	☐		
Company Field :	Business Solutions	☐		
	Infrastructure	☐		
	Service Provider	☐		
	Telecommunication	☐		
	Other	☐		

PART 2 : **Business and Service Strategy** (Please tick the most appropriate option that fit your choice)

1. **How do you rate your understanding of your organization business strategies?**

○ ○ ○ ○ ○

Excellent Good Average Poor N/A

2. **Do you have clear understanding of your organization service strategy (e.g. who is your customer, market, what is desired quality, service differentiation ,etc)**

○ ○ ○ ○ ○

Excellent Good Average Poor N/A

3. **Do you believe that there is clear alignment between business strategy and service strategy at your company**

○ ○ ○ ○ ○

Strongly Agree Agree Neutral Disagree Strongly disagree

How do you rate IT department's participation with other business entities during product or service concept development phase (early phase of service development)

○ ○ ○ ○ ○

Excellent Good Average Poor N/A

4. **Does your organization have a standard or framework for service management/delivery?**

○ ○ ○

Yes No Don't know

If yes, could you please mention this standard or framework?

---

5. **Do you believe that your organization has a clear phases for services or product development?**

○ ○ ○ ○ ○

Strongly Agree Agree Neutral Disagree Strongly disagree

PART 3 : **Service / Product Design** (Please tick the most appropriate option that fit your choice)

6. **Does your organization or IT unit have a clear assessment process for requested product or services from your organization business units?**

○ ○ ○ ○ ○

Strongly Agree Agree Neutral Disagree Strongly disagree

7. **Does your organization or unit have a clear requirement collection methodology for new requested products or services from business units**

○ ○ ○

Yes No Don't know

If yes, how do you rate requirements collection phase

○ ○ ○ ○ ○

Excellent Good Average Poor N/A

8. **Does your organization have Service level Agreement (SLA) with other departments or customers**

○ ○ ○

Yes No Don't know

If yes; how do you rate Service Level with other departments or customers?

○ ○ ○ ○ ○

Excellent Good Average Poor N/A

9. **During product of service design, does your organization or unit prepare solution architecture?**

○ ○ ○ ○

Always Sometimes Never Don't know

10. **Does your organization have Quality Standards in place for product or services?**

○ ○ ○

Yes No Don't know

If yes, could you please mention it ----------?

PART 4 : **Service Implementation /Operation / Periodic Improvement**
Please tick the most appropriate option that fit your choice

11. **Does your organization or IT unit have a clear implementation process for designed products or services?**

○ ○ ○

Yes No Don't know

If yes; how do you rate the efficiency and effectiveness of this process?

○ ○ ○ ○ ○

Excellent Good Average Poor N/A

12. **Does your organization have product/service change request process in place (e.g. change request document, change assessment, authorization and approval that used by internal customers like marketing, business development, etc).**

○ Yes ○ No ○ Don't know

If yes; how do you rate change request process

○ Excellent ○ Good ○ Average ○ Poor ○ N/A

13. **During service or product implementation, how do you rate adopted testing and validation methodology in term of percentage of defects or bugs?**

○ Excellent ○ Good ○ Average ○ Poor ○ N/A

14. **Does your organization or IT unit have a clear process for quality assurance**?

○ Yes ○ No ○ Don't know

15. **Is there a clear documented process to hand over service to support team (e.g. hand over document, training,etc)**

○ Yes ○ No ○ Don't know

If yes; how you rate the efficiency of this process

○ Excellent ○ Good ○ Average ○ Poor ○ N/A

16. **Does your organization have event and incident/problem management process (process to handles systems events like error and incidents that affect provided services)**

○ Yes ○ No ○ Don't know

If yes; how do you rate the efficiency of incident/ problem management process

○ Excellent ○ Good ○ Average ○ Poor ○ N/A

17. **Does your organization have a Access Management process (Access Management is the process of granting authorized users the right to use a service or systems , while preventing access to non-authorized users)**

○ ○ ○

Yes No Don't know

If yes; how do you rate the efficiency and effectiveness of this process?

○ ○ ○ ○ ○

Excellent Good Average Poor N/A

18. Does your organization have process for monitoring service availability?

○ ○ ○

Yes No Don't know

19. Does your organization have a dedicated Service desk (help desk) unit to register and solve customer complains

○ ○ ○

Yes No Don't know

If yes; how do you rate the efficiency and effectiveness of Help Desk function?

○ ○ ○ ○ ○

Excellent Good Average Poor N/A

20. Does your organization have IT auditing mechanism?

○ ○ ○

Yes No Don't know

If yes; how do you rate the role of auditing in enhancing service delivery?

○ ○ ○ ○ ○

Excellent Good Average Poor N/A

21. After service or product delivery, does your organization have a process for continual service improvement (periodic review of delivered service or products in term of quality , performance, service availability and reliability , ..etc) ?

○ ○ ○

Yes No Don't know

22. Does your organization or IT unit have procedure for measuring your customer satisfaction (internal customer like other functional department or for end user)

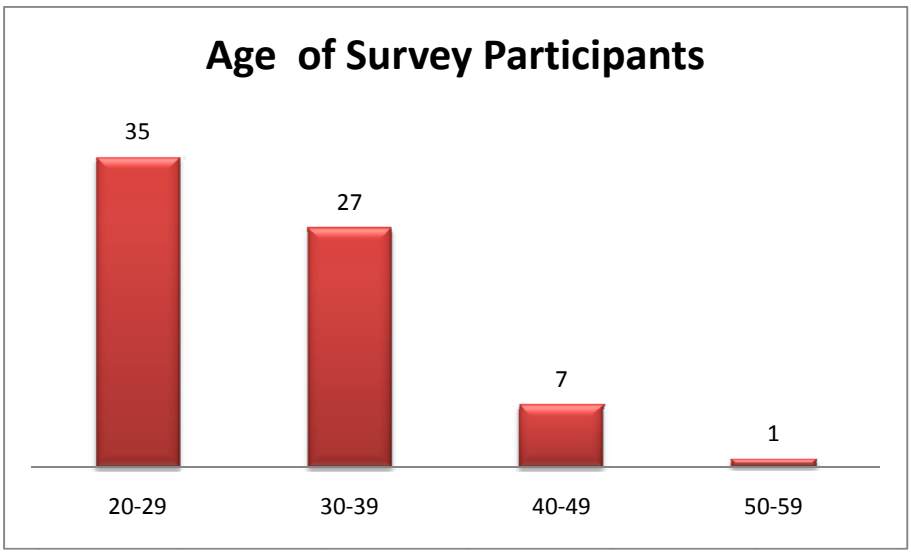
○ ○ ○

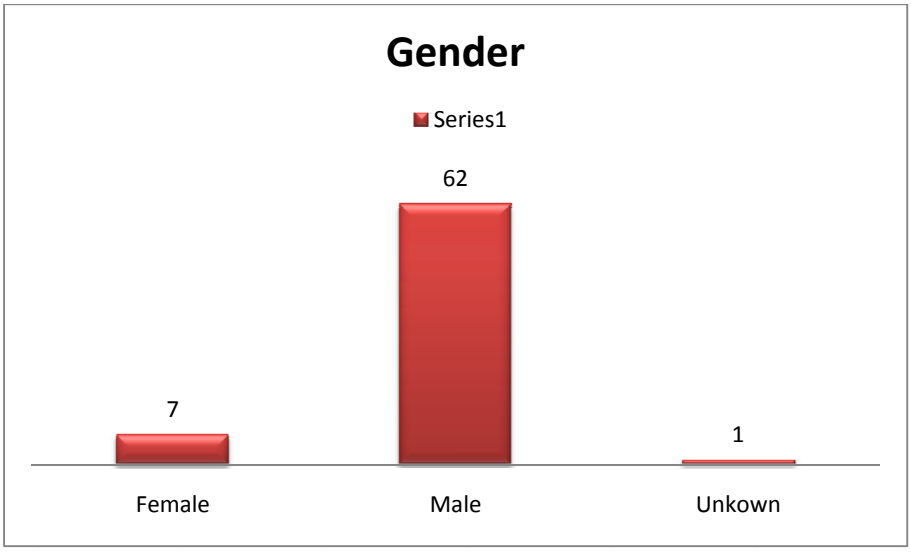
Yes No Don't know

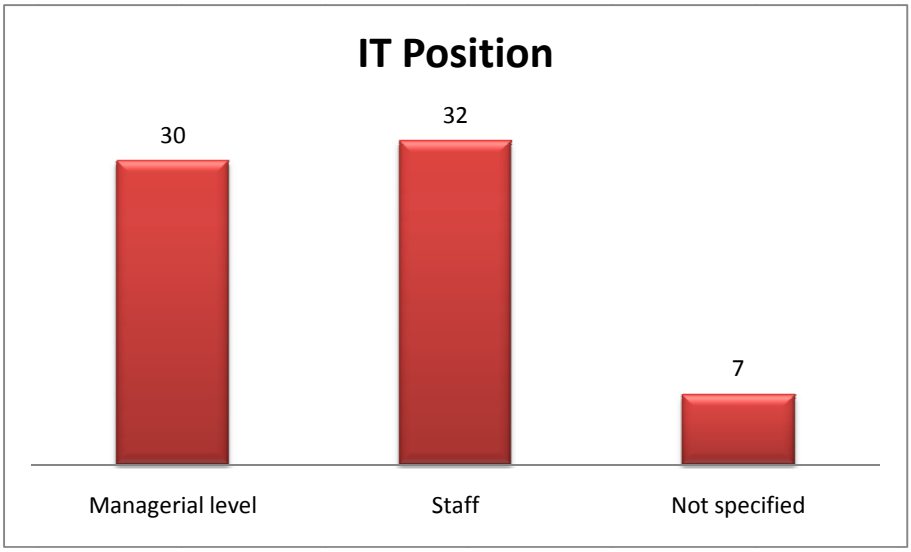
Appendix 2: Survey Results Row Data

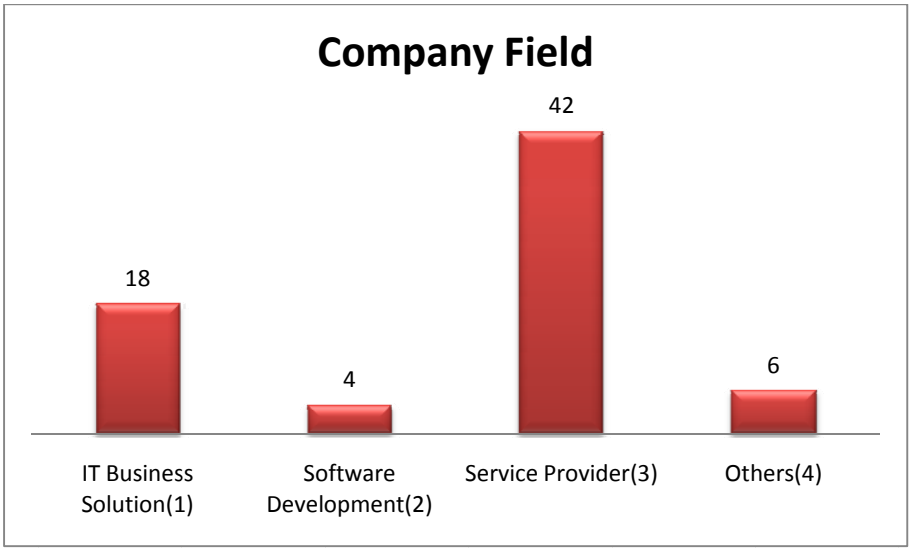
The survey was conducted online between 14/2012 and 25/3/2012, 70 responses are collected out of 84 of Palestinian IT firms, with confidence level 95% and marginal error 5% below figures illustrate each question along with statistical numbers

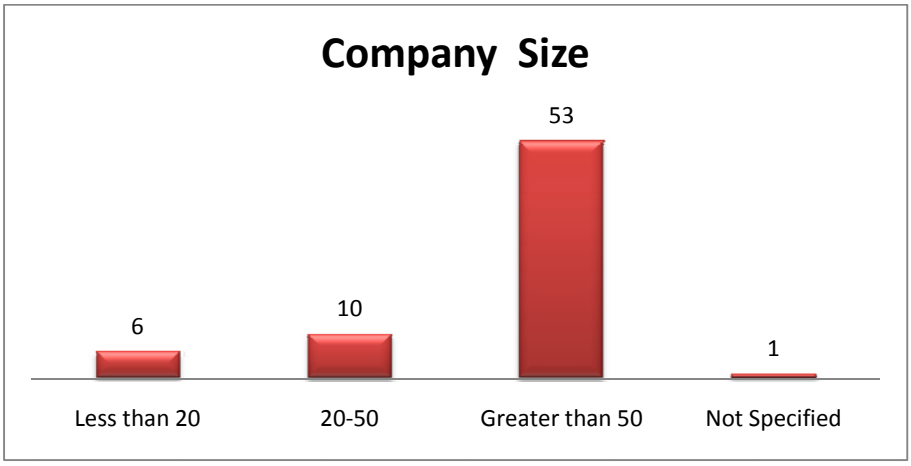
Part 1: General Information




Gender
Series1
62
7
1
Female
Male
Unkown


IT Position
30
32
7
Managerial level
Staff
Not specified

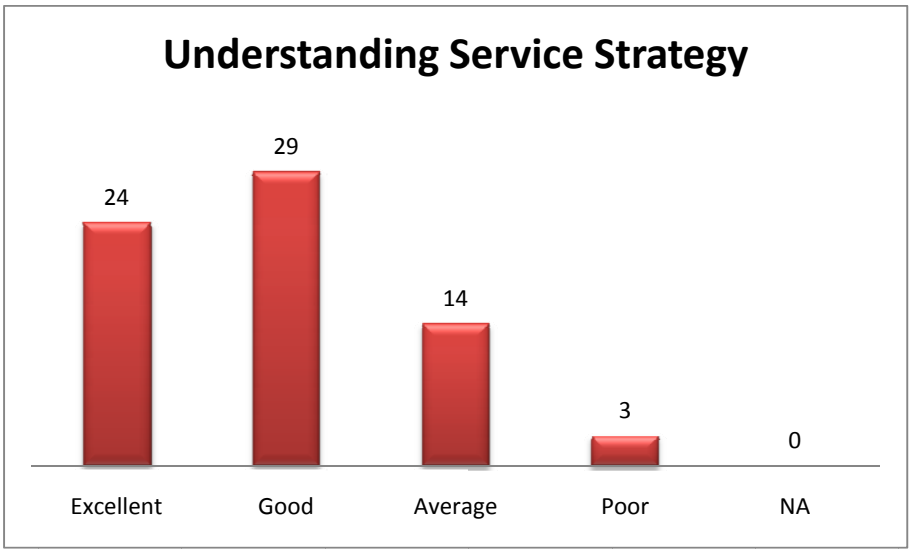

Company Field
18
4
42
6
IT Business Solution(1)
Software Development(2)
Service Provider(3)
Others(4)


Company Size
6
10
53
1
Less than 20
20-50
Greater than 50
Not Specified

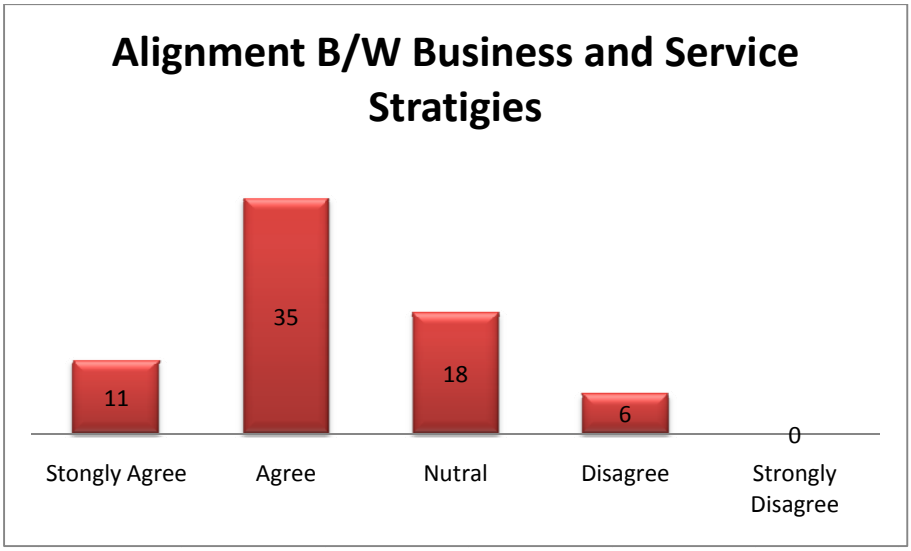
Part 2: Business and service Strategy (Q1-Q5)

1. How do you rate your understanding of your organization business strategies?

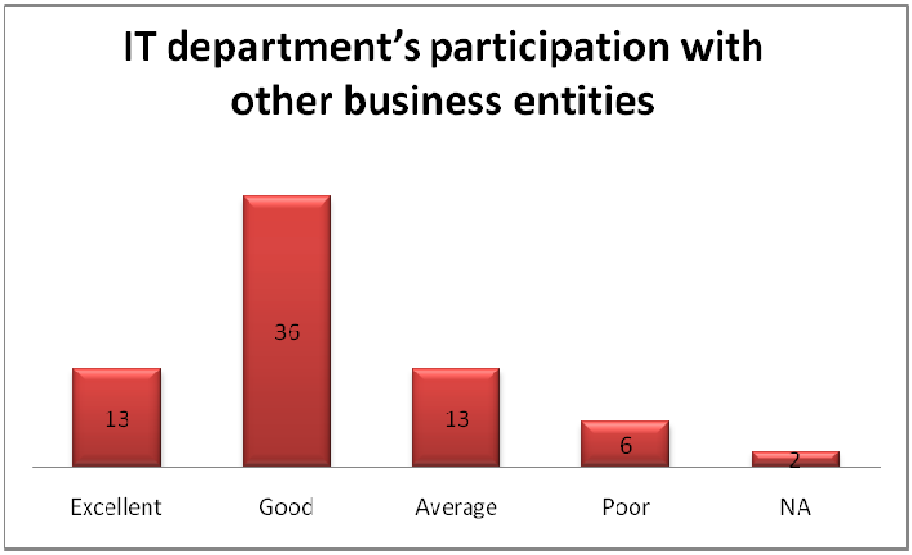
2. Do you have clear understanding of your organization service strategy?



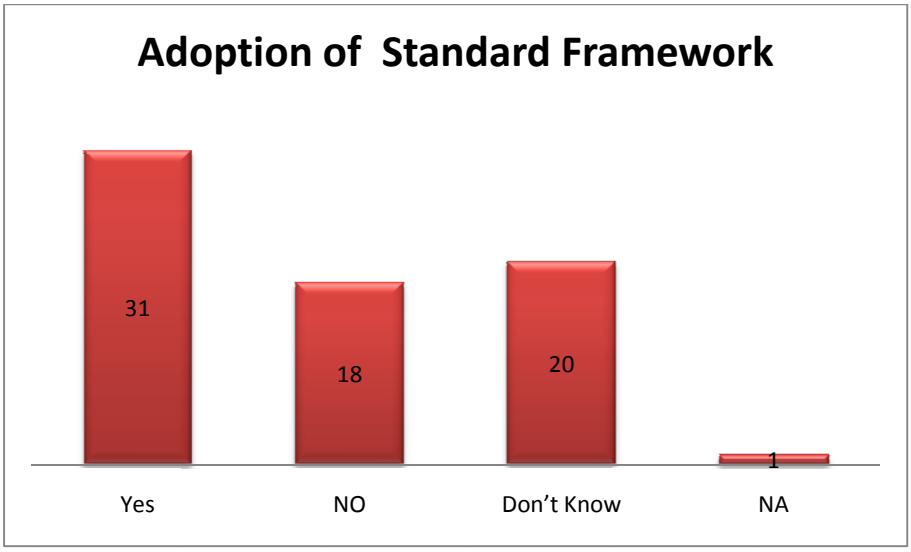
3. Do you believe that there is clear alignment between business strategy and service strategy at your company?



4. How do you rate IT department's participation with other business entities during product or service concept development phase (early phase of service development)

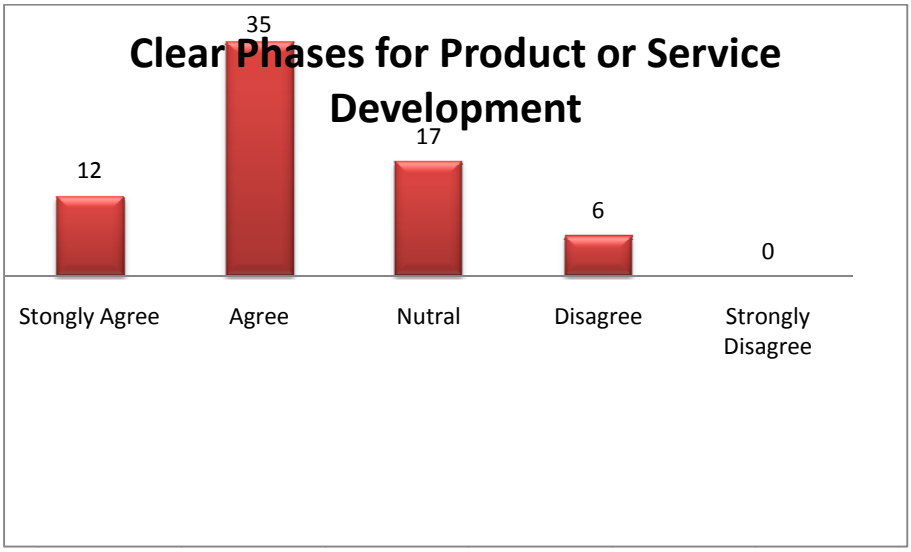


5. Does your organization have a standard or framework for service management/delivery?

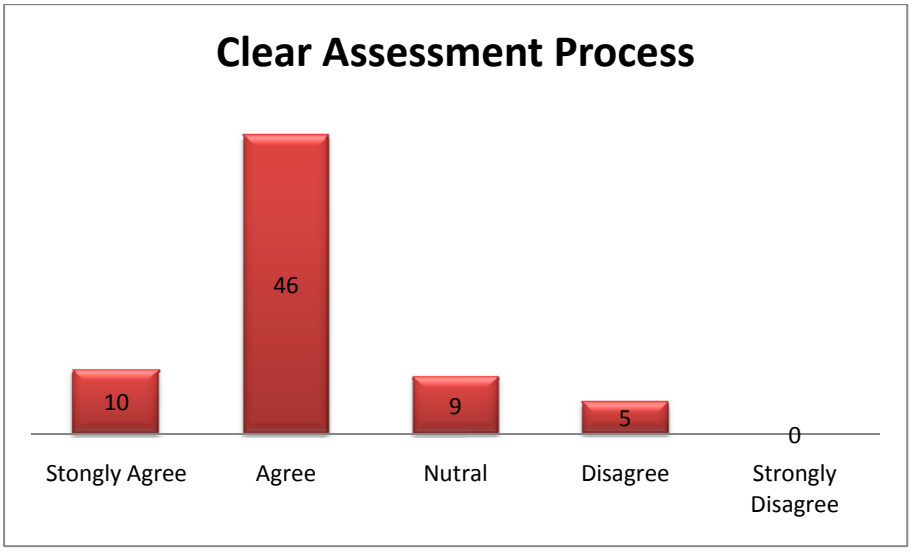


Part 3: Service /Product Design (Q6-Q10)

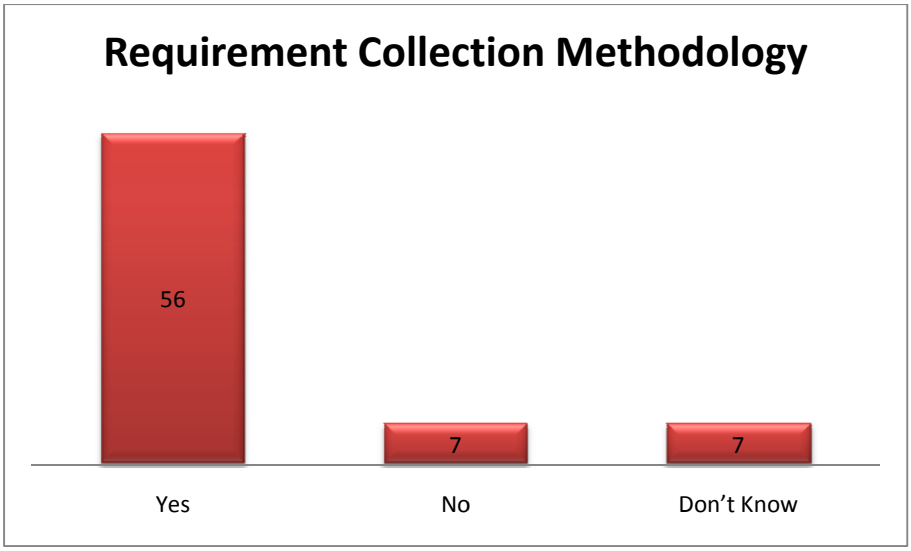
5. Do you believe that your organization has a clear phase for services or product development?



6. Does your organization or IT unit have a clear assessment process for requested product or services from your organization's business units?

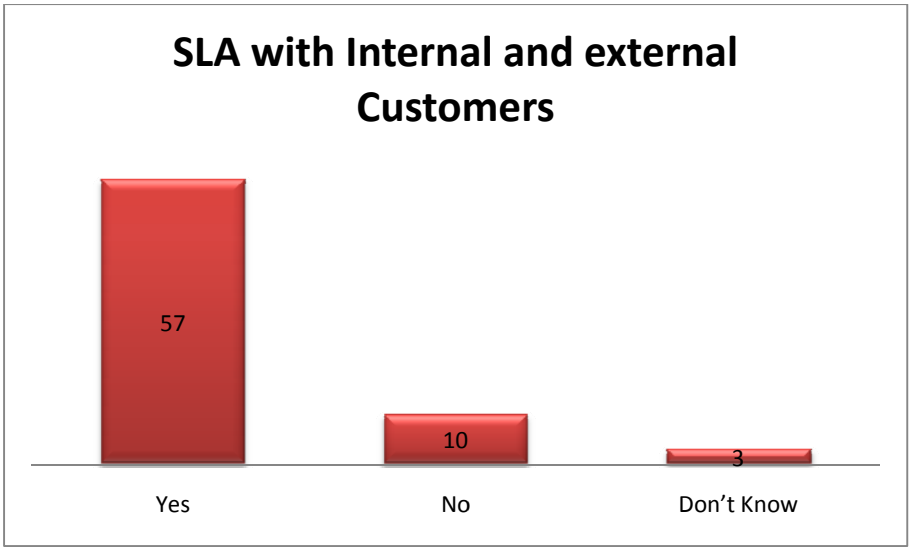


7. Does your organization or unit have a clear requirement collection methodology for new requested products or services from business units?

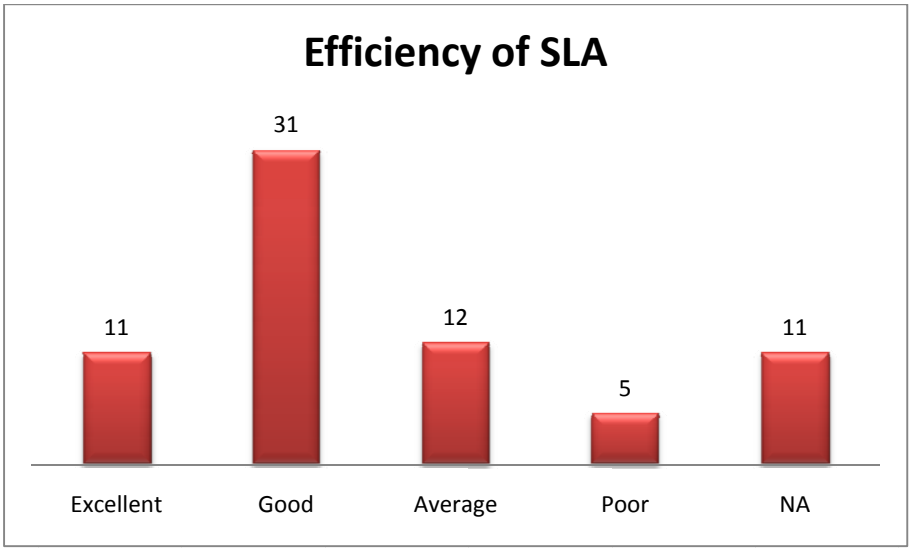


If yes, how do you rate requirements collection phase efficiency and effectiveness?

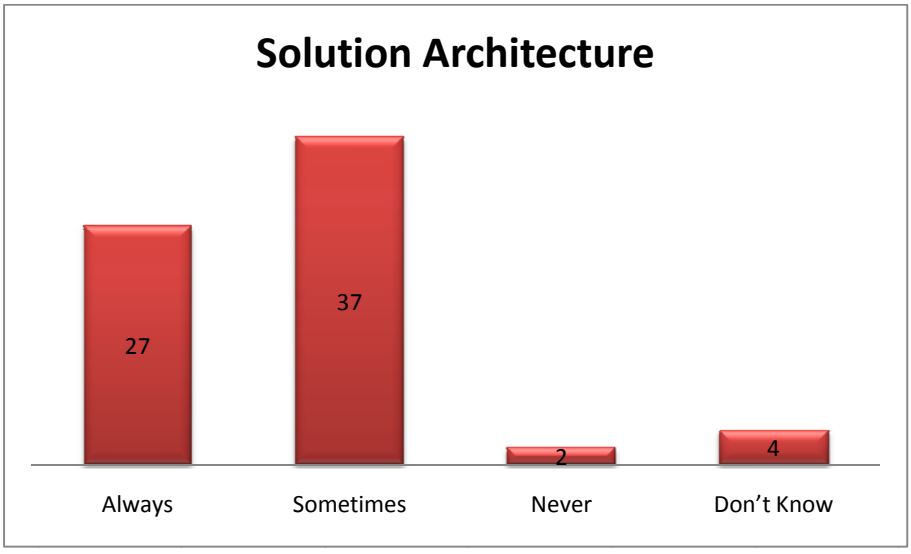
8. Does your organization have Service Level Agreement (SLA) with other internal departments like marketing or with customers?



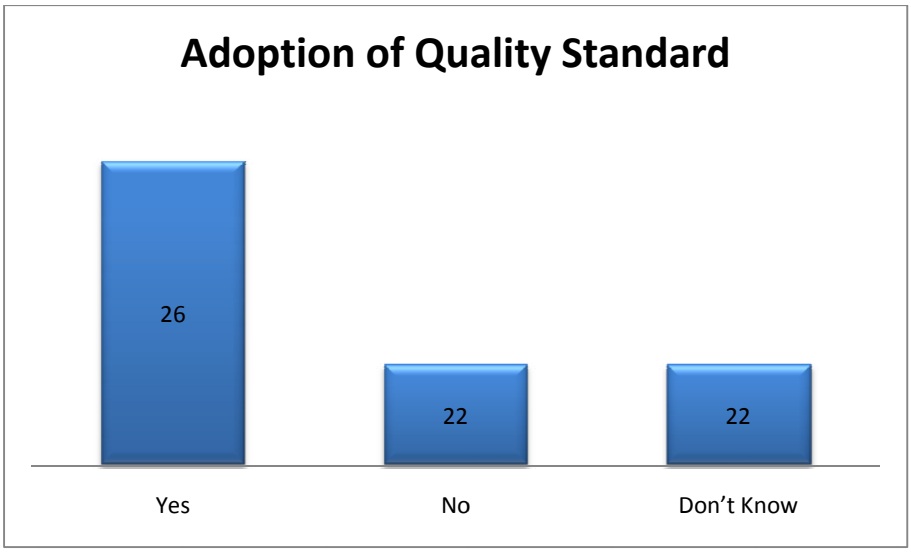
If yes; how do you rate Service Level with other departments or customers?



9. During product of service design, does your organization or IT unit prepare solution architecture?



10. Does your organization have Quality Standard in place for product or services?

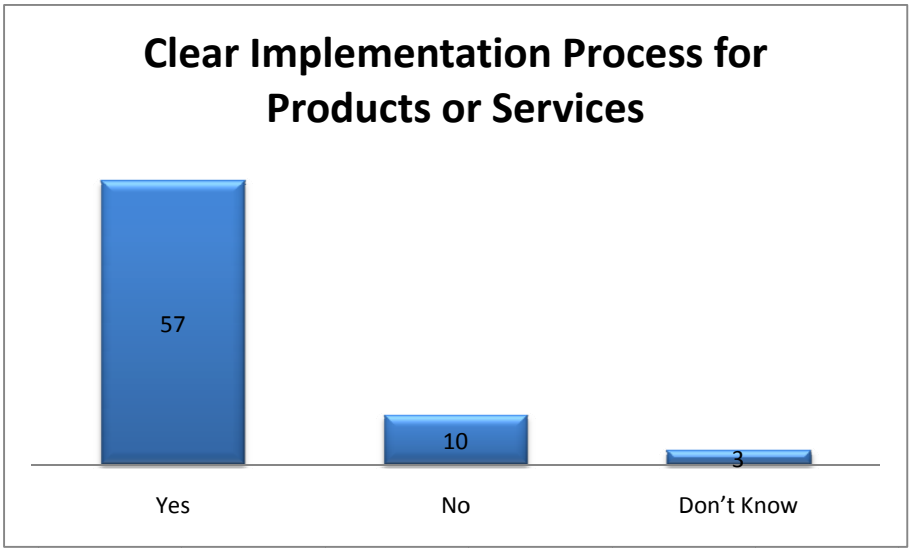


If yes, could you please mention it

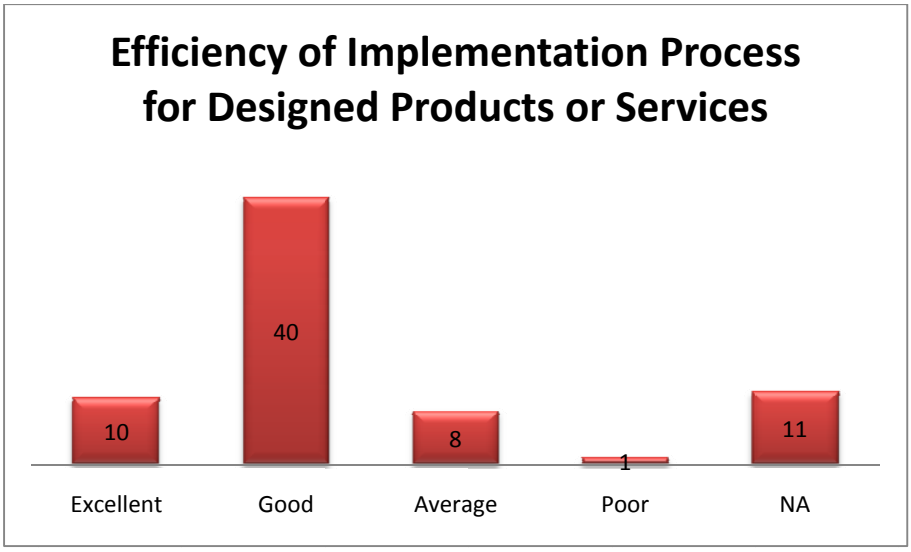
Only one out of 26 mention that they are using SixSigma

Part 4: Service Implementation /Operation / Periodic Improvement

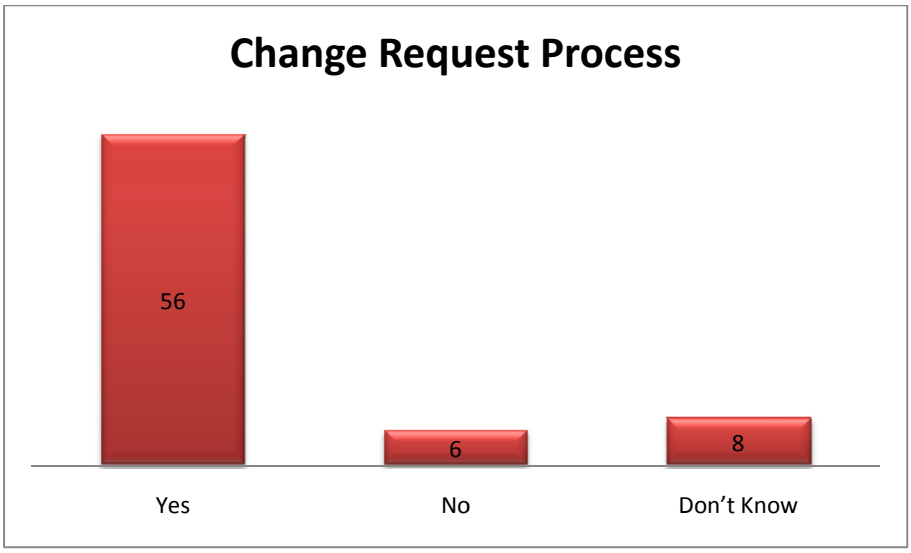
11. Does your organization or IT unit have a clear implementation process for designed products or services?



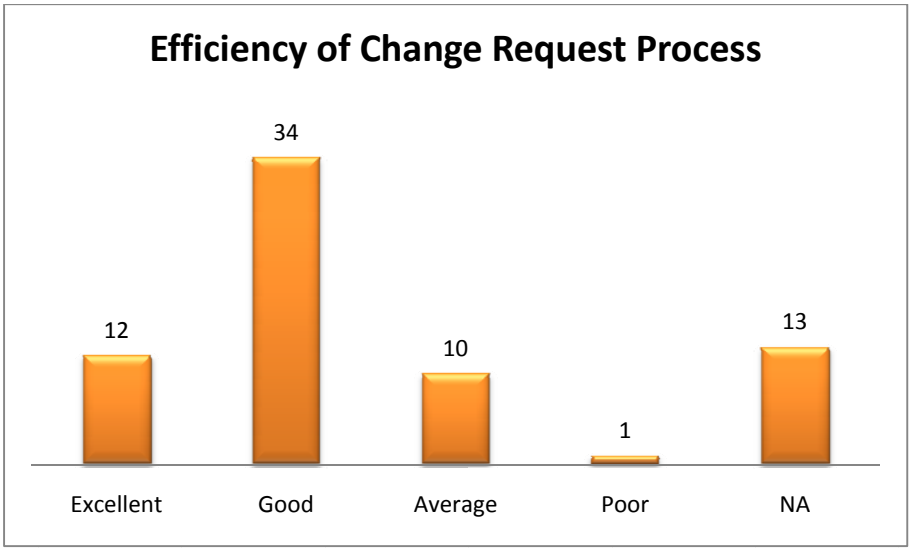
If yes; how do you rate the efficiency and effectiveness of this process?



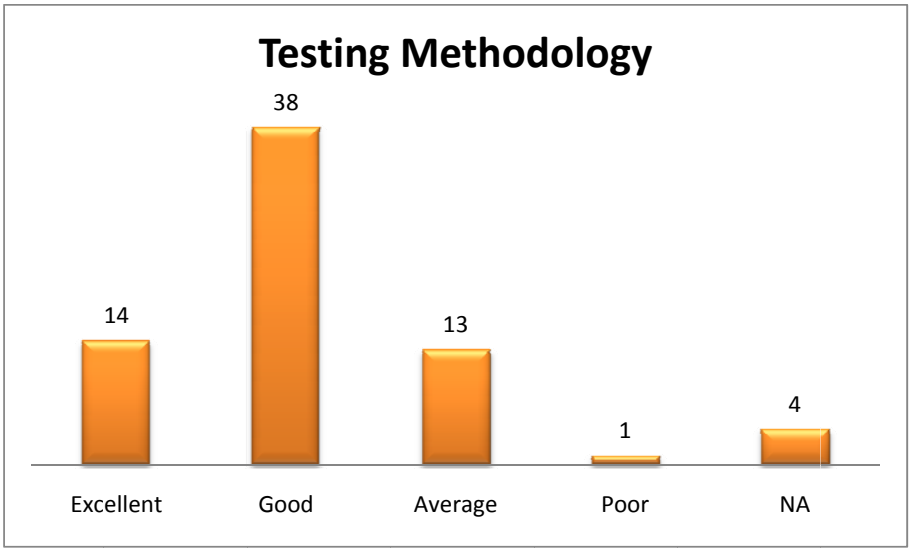
12. Does your organization have product/service change request process in place (e.g. change request document, change assessment, authorization and approval that used by internal customers like marketing, business development, etc).



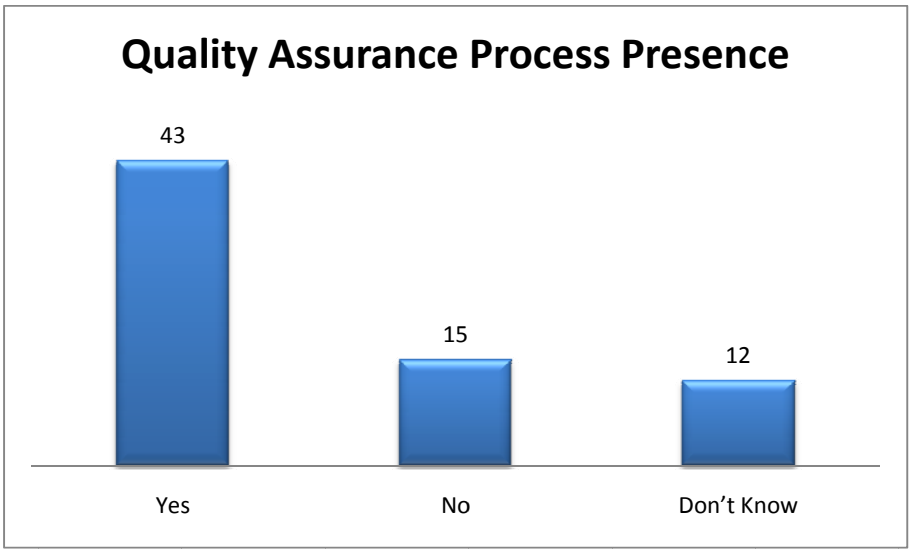
If yes; how do you rate the efficiency and effectiveness of change request process?



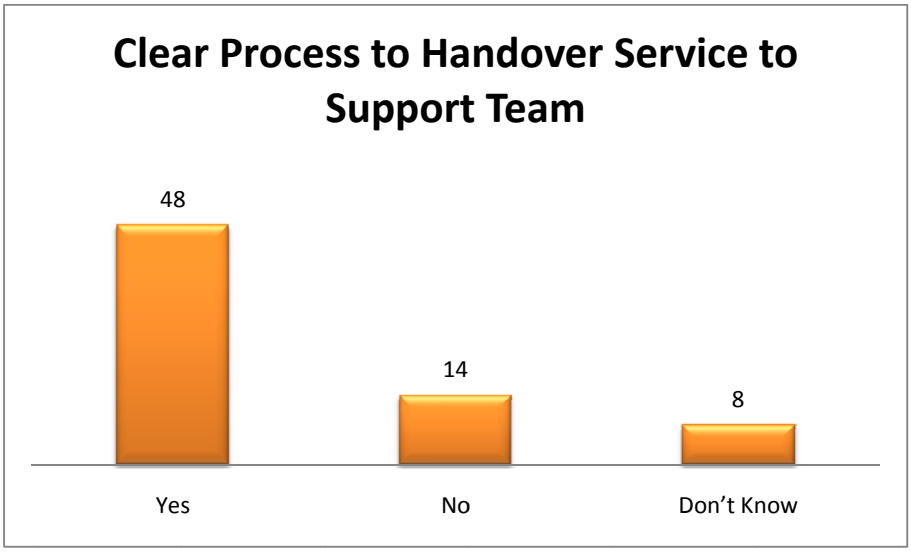
13. during service or product implementation, how do you rate adopted testing and validation methodology in term of percentage of defects or bugs?



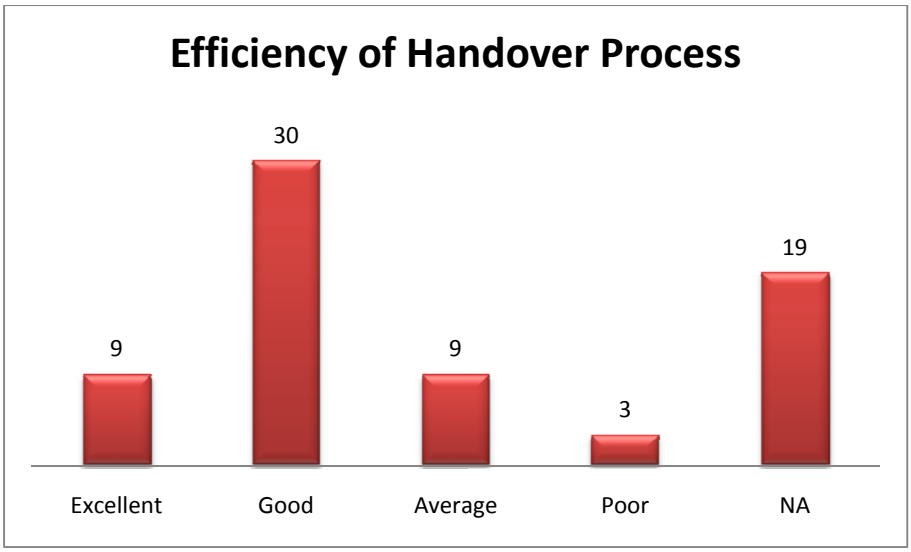
14. Does your organization or IT unit have a clear process for quality assurance?



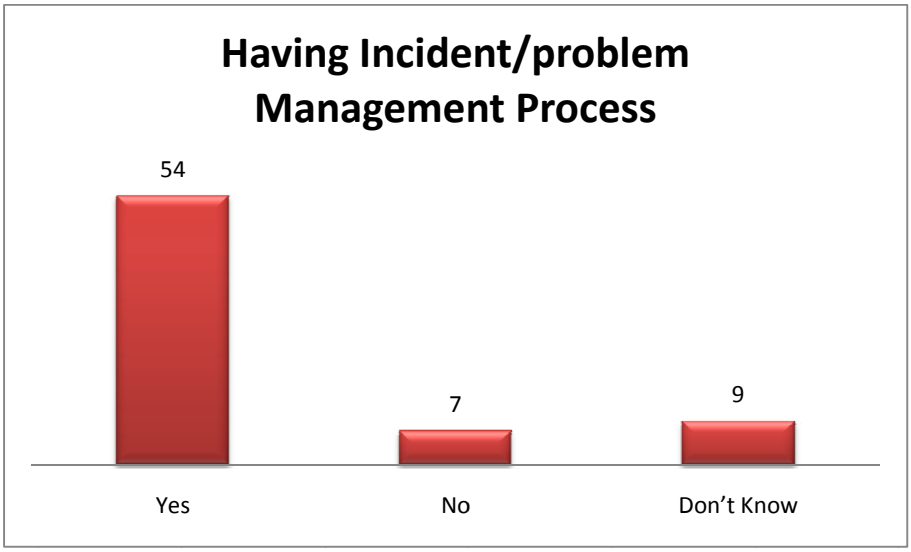
15. Is there a clear documented process to hand over service to support team (e.g. hand over document, training, etc)?



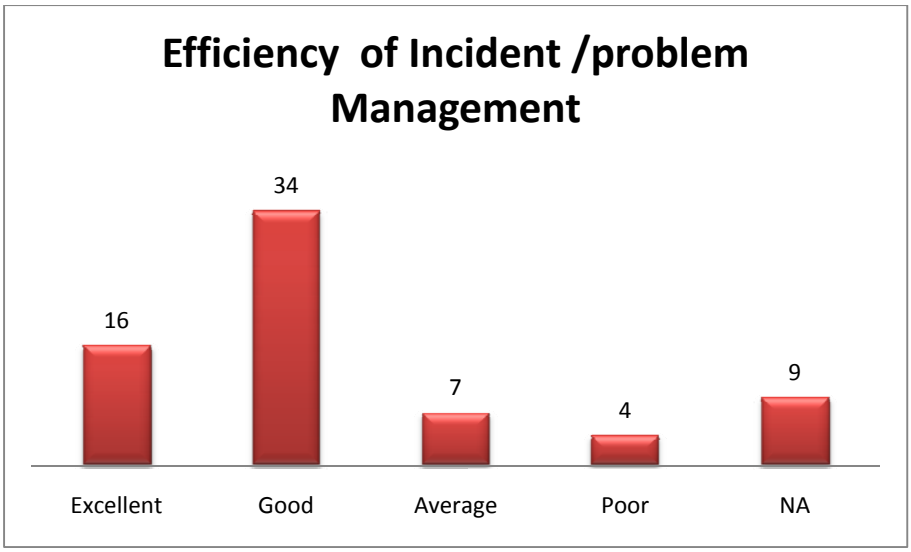
If yes; how do you rate the efficiency and effectiveness of handover process?



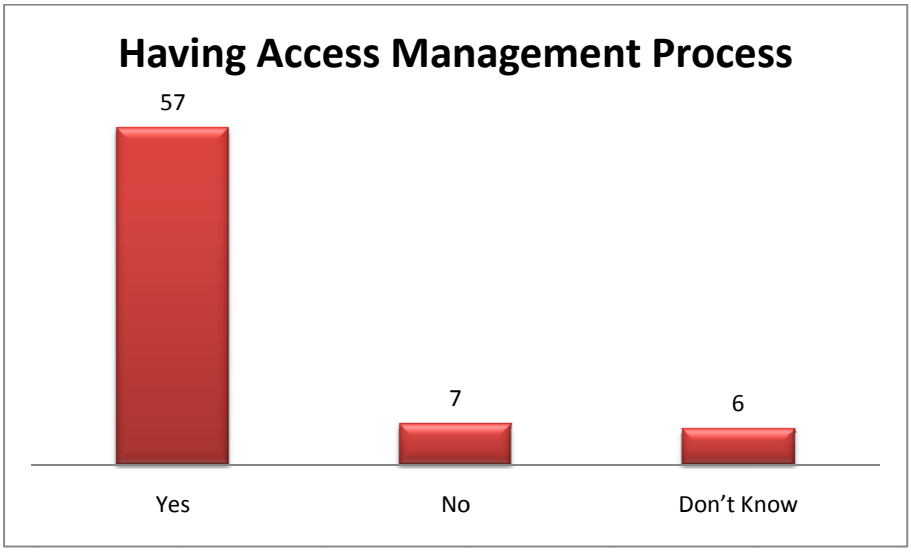
16. Does your organization have incident /problem management process (process to handles problems and incidents that affect provided services)



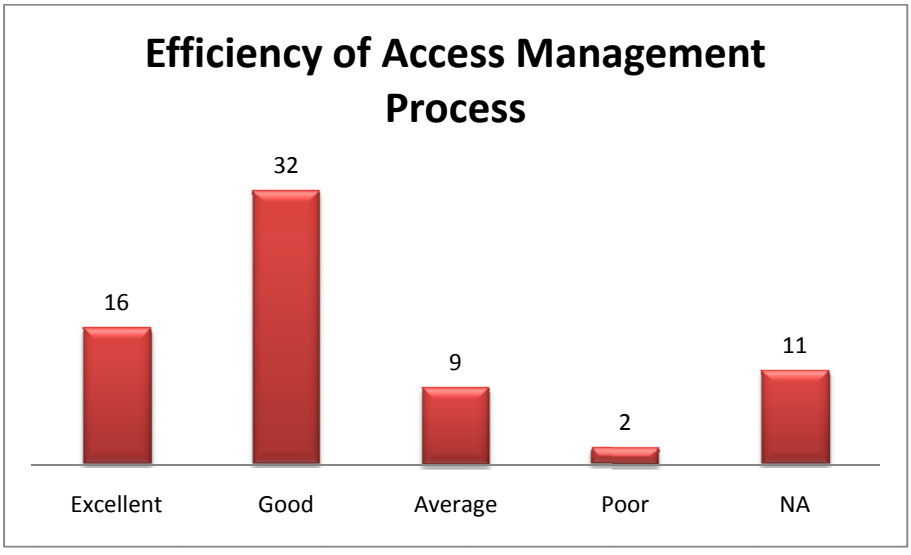
If yes; how do you rate the efficiency and effectiveness of incident/ problem management process?



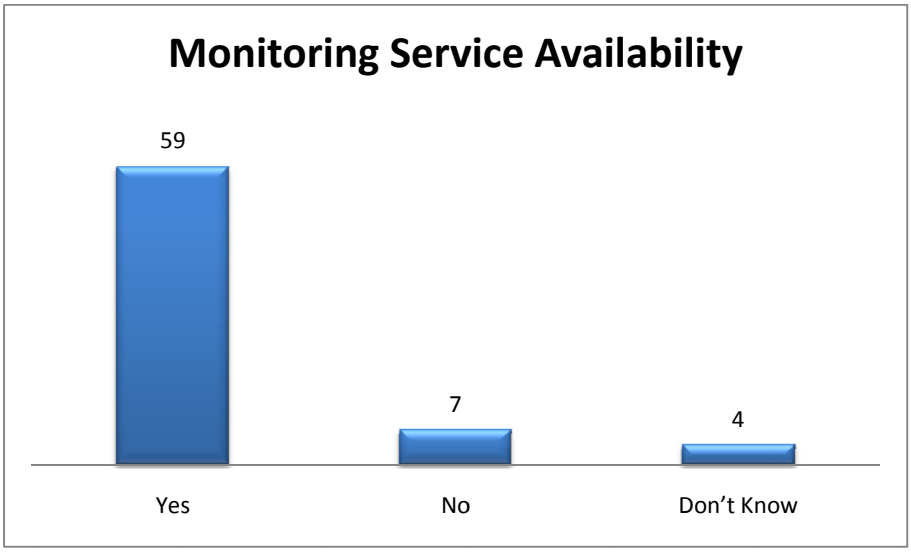
17. Does your organization have a Access Management process



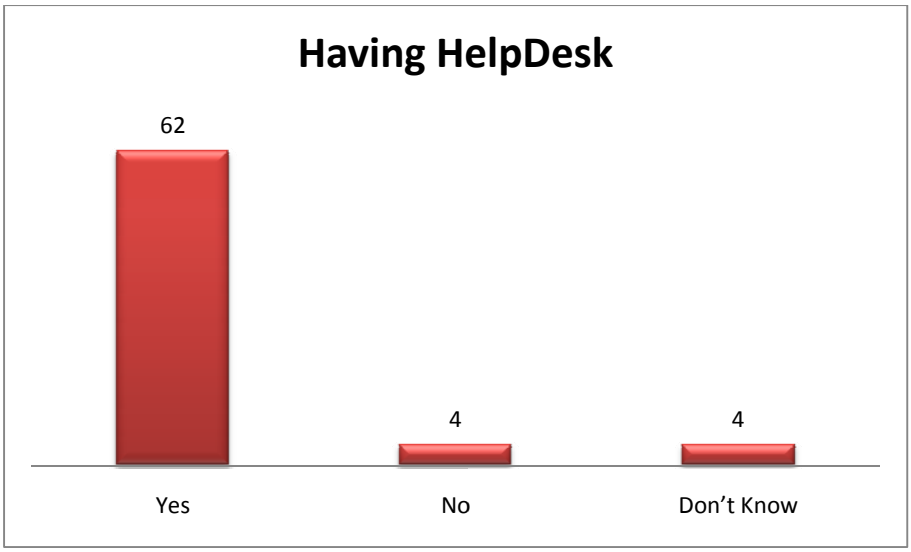
If yes; how do you rate the efficiency and effectiveness of Access Management Process?



18. Does your organization have process for monitoring service availability?

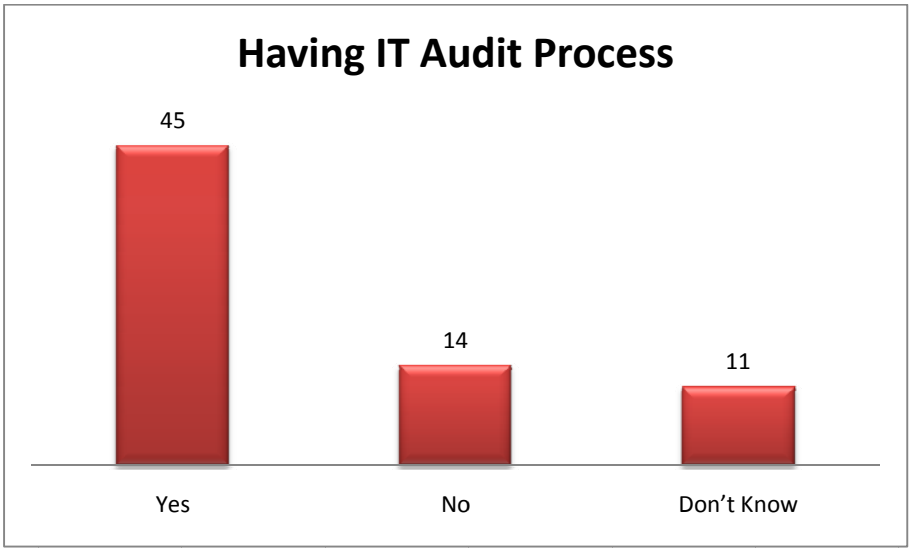


19. Does your organization have a dedicated Service desk (Help Desk) unit to register and solve customer complains

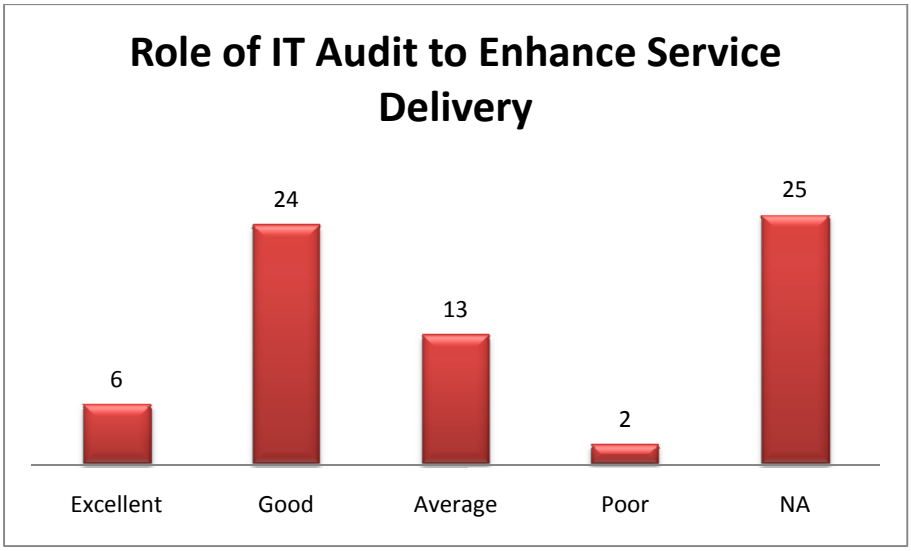


If yes; how do you rate the efficiency and effectiveness of Help Desk Function?

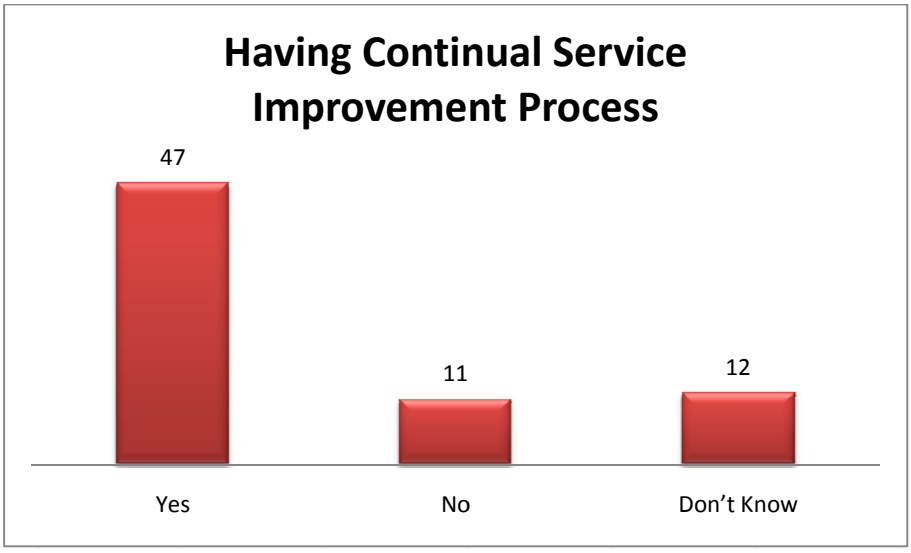
20. Does your organization have IT auditing mechanism?



If yes; how do you rate the role of auditing in enhancing service delivery?



21. After service or product delivery, does your organization or IT have a process for continual service improvement?



22. Does your organization or IT unit have procedure for measuring your customer satisfaction (internal customer like other functional department or for end user) ?.

Appendix 3: Semi-Structured Interview Form

Dear Sir / Madam

Appreciate your kind help, your opinion is very important since it will help to enhance IT service delivery in Palestine.

The purpose of this interview is to addresses IT services delivery and its strengths, weaknesses, opportunities, and threats; all information of this interview will be used for research purposes and will not be used for any other purpose.

Many thanks in advance

Student: Qutaybah Adel Khwayrah

PART One : General Information				
Age :	_____		**IT Position**	_____
Gender:	_____		**Address:**	_____
Company Name	_____		**City:**	_____
Company Employee	Less than 20	☐		
	21 - 50	☐		
	Greater Than 50	☐		
Company Field :	Business Solutions	☐		
	Infrastructure	☐		
	Service Provider	☐		
	Telecommunication	☐		
	Other	☐		

PART 2 : **Business and Service Strategy**

- **Organization business and service strategies?**

- **IT department's participation with other business entities during product or service concept development phase (early phase of service development)**

- **Standard or framework for service management/delivery?**

- **Phases for services or product development?**

PART 3 : **Service / Product Design**

- **Assessment process and requirement collection for new product or service**

- **Service level Agreement (SLA) with other departments or customers**

- **Is there Service Quality Standards in place for product or services?**

PART 4 : **Service Implementation /Operation / Periodic Improvement**

- **Implementation process for designed products or services? How to do you rate it**

- **Change request process in place (e.g. change request document, change assessment, authorization and approval that used by internal customers like marketing, business development, etc).**

- **Testing methodology and QA**

Hand over service to support team (e.g. hand over document, training, etc)

- **incident/problem management process (process to handles systems events like error and incidents that affect provided services)**

- **Access Management process (Access Management is the process of granting authorized users the right to use a service or systems , while preventing access to non-authorized users)**

- **Monitoring service availability?**

- **Service desk (help desk) function , performance and quality**

- **IT auditing mechanism?**

- **After service or product delivery, does your organization have a process for continual service improvement?**

- **Measuring your customer satisfaction (internal customer like other functional department or for end user)**

Note: ----------

Appendix 4: List of Interviewees

1	Hassam Mahmoud Glen	Professional Services Manager	ULIMIT Advanced Business Solutions
2	Nidal Khalil	Business Support Senior Manager	WM
3	Zafer AbdelHalim	IT operations and Infrastructure Senior Manager	WM
4	Sadeq Shakhshir	IT consultant	Independent
5	Bashar Selwadi	Professional Services Manager	Next level Technology (NLT)
6	Saed Majdalawi	Business Program Manager	WM

جامعة النجاح الوطنية

كلية الدراسات العليا

تحسين عمليات تزويد الخدمة للشركات والمؤسسات المعتمدة بشكل رئيسي على تقنية المعلومات

إعداد

قتيبة عادل خويرة

إشراف

د. ايهم جعرون

قدمت هذه الأطروحة استكمالاً لمتطلبات درجة الماجستير في الادارة الهندسية بكلية الدراسات العليا في جامعة النجاح الوطنية في نابلس، فلسطين.

2012

تحسين عمليات تزويد الخدمة للشركات والمؤسسات المعتمدة بشكل رئيسي على تقنية المعلومات

إعداد

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إشراف

د. ايهم جعرون

الملخص

إن فلسطين كجزء من الدول النامية تتأثر بموجة التطورات التكنولوجية على كافة الصعد، وكنتيجة لذلك اصبح مفهوم خدمات تكنولوجيا المعلومات رائجا في العديد من المجالات كاالخدمات البنكية والاتصالات والانترنت وغيرها العديد من المجالات، من هذا المنطلق فأن الاهتمام بنوعية وكيفية الخدمات المعتمدة على تكنولوجيا المعلومات يعتبر من اهم عوامل النجاح لشركات تكنولوجيا المعلومات.

إن هذا البحث مبادرة طموحة لمراجعة آليات تزويد خدمات تكنولوجيا المعلومات لمعرفة المشاكل المتعلقة بها و تحديد نقاط القوة و نقاط الضعف وبالتالي وضع الآلية المناسبة لمعالجتها من خلال وضع اطار عام لتزويد خدمات تكنولوجيا المعلومات في فلسطين.

لقد اعتمد الباحث منهجية بحث متعددة الطرق تجمع بين المنهج الكمي و النوعي حيث استخدم في البداية طريقة مجموعة التركيز لمعرفة مشاكل عملية تزويد الخدمات و من ثم تم عمل استبانة لمعرفة رأي العاملين في مجال تكنولوجيا المعلومات حول عملية تزويد الخدمات للشركات المعتمدة على تكنولوجيا المعلومات، ثم بناءً على نتائج مجموعة التركيز والاستبانة وكنوع من التحقق من النتائج، قام الباحث باجراء مقابلات مع عدد من المحترفين في هذا المجال.

بناء على تحليل نتائج الاستبانة والمقابلات، تم تحديد المشاكل الرئيسية لعملية تزويد الخدمات في قطاع تكنولوجيا المعلومات ومن اهمها عدم وجود تواؤم كلي بين استراتيجية العمل ككل

واستراتيجية خدمات تكنولوجيا المعلومات، وفي نفس الوقت تبين عدم وجود عملية منتظمة وشاملة لتزويد الخدمات المعتمدة على تكنولوجيا المعلومات، كما تبين و جود مشاكل في منهجية فحص الخدمات قبل و بعد اطلاقها.

لمعالجة هذه المشاكل في شركات تكنولوجيا المعلومات الفلسطينية، عمل الباحث على بناء اطار اداري مبسط لعمليات تزويد الخدمات بالاعتماد على الاطار العالمي المعروف باسم "ITIL" .ان الاطار المبسط و الذي تم تسميته "PITSDF " يهدف الى تزويد الشركات الفلسطينية المعتمدة على تكنولوجيا المعلومات بإطار عمل اداري لتزويد خدمات تكنولوجيا المعلومات سهل الاستخدام وغير مكلف وفي نفس الوقت يلبي حاجات هذه الشركات في هذا المضمار من خلال تنظيم عملية تزويد الخدمات في كافة مراحل تطويرها.

ان هذا الاطار المبسط يتكون من خمس مراحل رئيسية يندرج تحتها عدد من العمليات الفرعية، وهذة المراحل هي: استراتيجية خدمات تقنية المعلومات، مراحل التصميم، بناء الخدمات، تشغيلها، واخيراً التحسين المستمر لها.

إن هذا البحث فتح الباب لمبادرات ومساعي اخرى لمتابعة تطوير هذا المجال الحيوي و الذي بات يمس كافة تواحي الحياة العصرية في وقتنا الحاضر.