

# Information Technology Service Management (ITSM) Implementation Methodology Based on Information Technology Infrastructure Library Ver.3 (ITIL V3)

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## Abstract

This paper is intended to cover the concept of IT Infrastructure Library Version 3 (ITIL) v3 and how to implement it in order to increase the efficiency of any Egyptian IT corporate and to help the corporate employees to do their work easily and its clients to feel the quality of services provided to them. ITIL is considered now as the de facto standard framework for IT Service Management (ITSM) in organizations which operate their business which is based on IT infrastructure and services.

ITIL v3 was implemented in western organizations but still it is a new framework for the Egyptian and Arabian environment. The best proof of the lack of ITSM in the Arab region and not Egypt alone is that the percentage of the companies which have ISO/IEC 20000 are less than 2% of the total certified companies in the whole world and in Egypt no company has it until now as stated on APMG ISO/IEC 20000 website[1]. Accordingly this paper investigates an implementation methodology of ITIL in Egyptian corporate taking into consideration the cultural factors and how it will affect the success of this implementation. We have already implemented this methodology in three Egyptian companies and it succeeded to increase the level of process maturity from level one to level four according the ITIL Process Maturity Framework (PMF) [2]

This paper will include an introduction about the problem Egyptian corporates are facing now, a brief introduction to ITIL V3 with its processes and lifecycle stage, related work, the implementation methodology, the results achieved, conclusion and the future work.

**Keywords:** ITIL V3, ITSM, PMF, ISO/IEC 20000 and Service Management.

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## 1. INTRODUCTION TO ITSM NEEDS IN THE EGYPTIAN MARKET

It is clear nowadays that the size of any corporate that uses IT to handle their day to day business is increasing in a very fast way. These corporate are depending more and more every day on IT services and computing processing, that is why they must consider building and implementing a clear ITSM and its processes which can control all the IT services better. But when we look around us in almost every corporate now we can find them have more than one team of professional engineers who try to do their best in solving the day to day discovered problems and building new services and solutions too without any governing body like a formal written policy which defines roles and responsibilities of each one.

After some time the life of these teams will be very tough as they will turn to be fire fighters all the time, because the environment is increasing in size and complexity and it is changing every minute due to many updates, hot fixes and changing business needs too. The problem will increase if the corporate is a big corporate with different customers at different locations with different needs and needed customizations. The problems these teams face every now and then are due to:

- 1- Having no system maintaining and optimizing incident and problem management.
- 2- Having no system maintaining and optimizing change management.
- 3- Having no ability to design new services as they losing all their time in firefighting current incidents and problems and failed change implementations.
- 4- Working a lot of time every day and even having shifts in the weekends.
- 5- Losing their customers' satisfaction and loyalty.
- 6- Doing rework all the time as there is no documentation and knowledge transfer techniques.
- 7- Losing control over Service Availability, Continuity, Maintainability and Security because of current, remaining and reopened incidents and problems and failed change implementations.
- 8- Spending more money on Service without any increase in the Service output.

This is why the big companies need ITSM more than small ones and this does not mean that small companies do not need ITSM. It is clear that all companies need ITSM and it depends on the company size and management methodology in deciding to what extent it will need help from ITSM.

## 2. INTRODUCTION ITIL V3

ITIL V3 is now considered the best public framework for IT Service Management and it includes best practices for any IT service in any company whether this company is an internal IT department which provides services to internal employees and departments as depicted below in figure 1, a Shared Service Unit (SSU) which is an IT department in a group of companies and it delivers services to all the employees in the companies of this group as depicted below in figure 2 or an external service provider which serves other companies in the market as depicted below in figures 3:

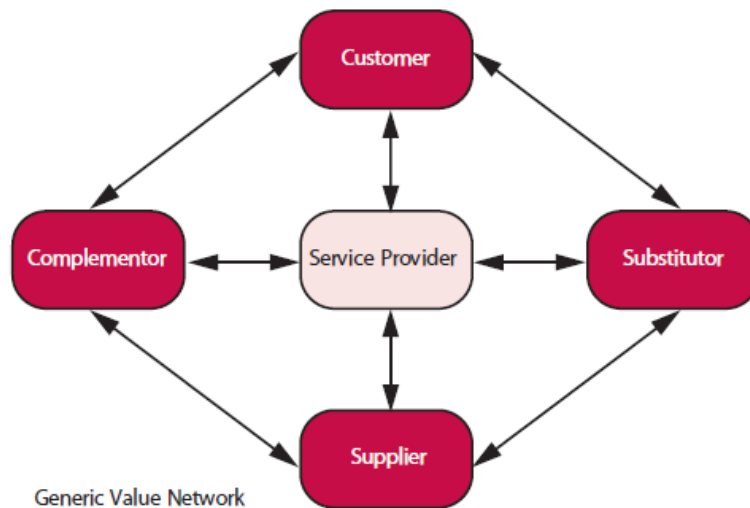


FIGURE 1: Internal Service Provider [3]

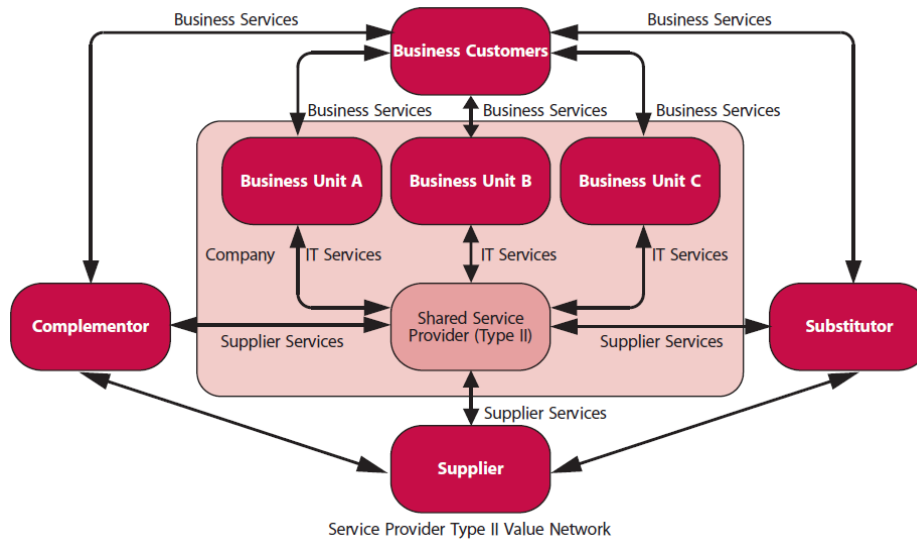


FIGURE 2: Share Service Unit Provider [4]

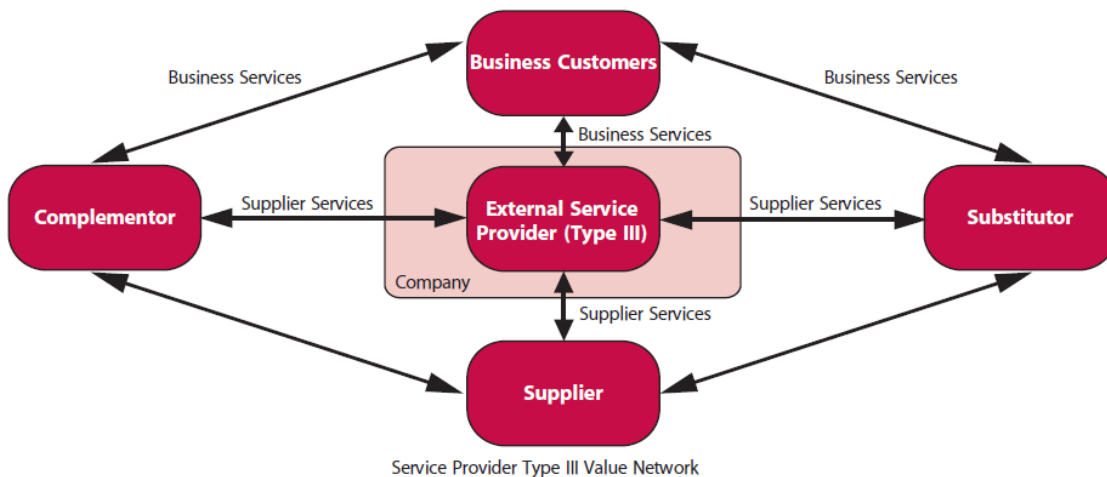
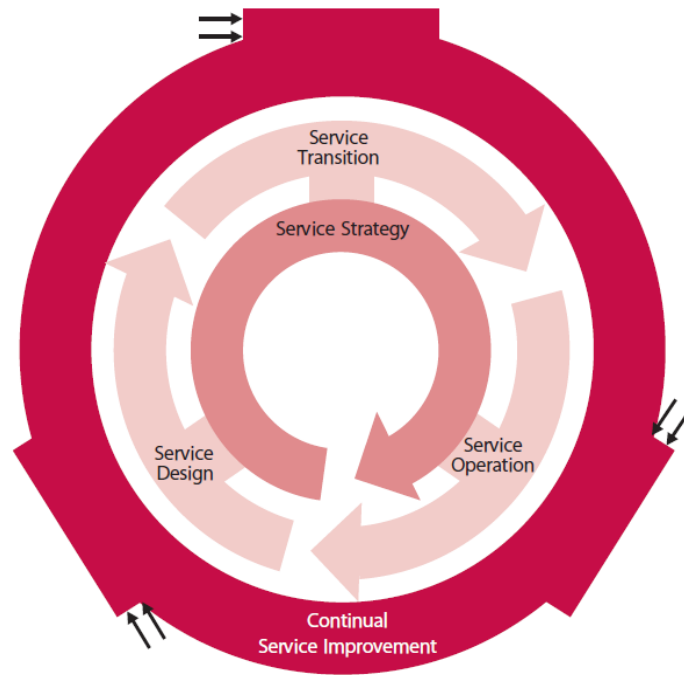


FIGURE 3: External Service Provider [5]

ITIL defines a service as “A means of delivering value to customers by facilitating outcomes customers want to achieve without the ownership of specific costs and risks.” [6] which clarifies to every service provider the real meaning of service which is a value delivered to the customer to increase the capability of achieving goals with the companied risks and costs. ITIL V3 also divided any IT service lifecycle to five stages as shown in figure 4 and they are:

- Service Strategy which defines the customer needs and the ability of the service provider to decide whether to invest in these needs and whether they will be beneficial or not
- Service Design which designs the services with all its aspects like technical architecture, management systems, measurement systems and processes
- Service Transition which builds, tests and delivers the new and changed services
- Service Operation which run and maintain the services the customers use to reach to their business goals
- Continual Service Improvement which deals with the service throughout its lifecycle to ensure continual improvement to sustain the value of the service.



**FIGURE 4:** ITIL V3 Service Lifecycle [7]

The five stages of the lifecycle are shown in figure 5 contain about twenty processes.

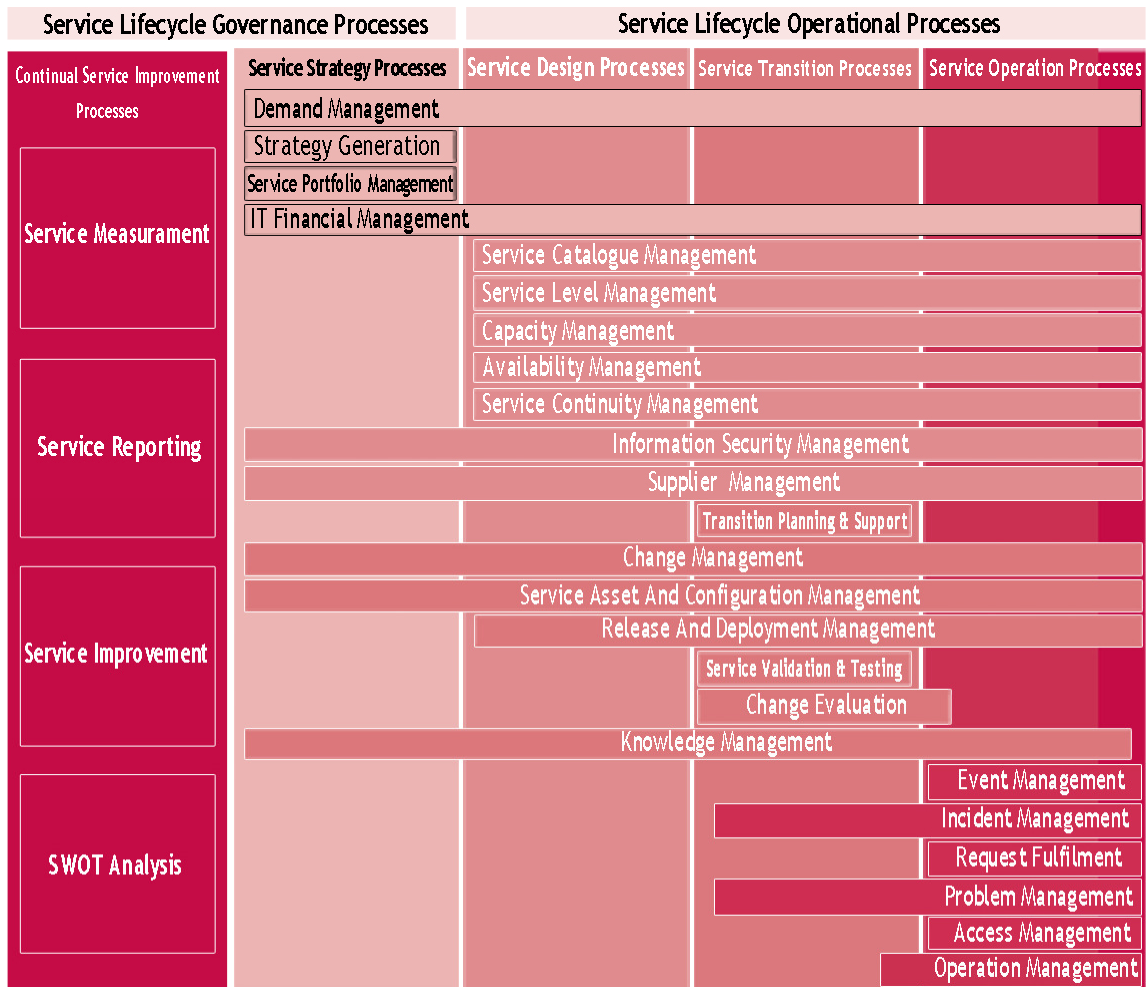


FIGURE 5: ITIL V3 Service Lifecycle Processes [8]

### 3. RELATED WORK

As stated on the ITIL official website [9] there are thousands of organizations worldwide which have adopted ITIL V3 like NASA, the UK National Health Service (NHS), HSBC bank, Disney, IBM, Telefonica, HP and British telecom (BT). We have implemented the following methodology in three companies in Egypt which are ASCOM, DP World and Nile.Com and we succeeded in raising the process maturity levels in the PMF in them all for three processes which are:

- Incident Management which “concentrates on restoring the service to users as quickly as possible, in order to minimize business impact” [10].
- Problem management which “involves: root-cause analysis to determine and resolve the cause of incidents, proactive activities to detect and prevent future problems/incidents and a Known Error sub-process to allow quicker diagnosis and resolution if further incidents do occur.” [10]
- Change Management which “ensures that changes are recorded and then evaluated, authorized, prioritized, planned, tested, implemented, documented and reviewed in a controlled manner.” [11]

### **3-1. ASCOM Company**

The first company is ASCOM which is working in mining and has 350 employees served by an IT department containing five members including the IT manager. He described ASCOM by saying "ASCOM has an array of diversified services and activities and we are keen to offer them professionally to our customers. Over the three decades of its life, ASCOM has specialized in geological services, studying and evaluating raw materials quality, and presenting technical support for quarries operation. ASCOM acquired an excellent reputation in the technical services it presents to the mining sector. ASCOM's market share of the raw materials necessary for cement production exceeded 60% in Egypt." ASCOM IT department serves more than one company under ASEC which are ASCOM, NEBTA, ASCOM SYRIA, LAZREG, NMD Nubia, ASCOM CCM, ASCOMA, ASCOM Ethiopia and ASCOM Emirates for mining which makes the IT department a Share Service Unit Provider as shown in figure 2 above.

### **3.2 DP World**

DP World Sokhna is located at the southern entrance of the Suez Canal, Egypt, 120 kilometers from Cairo. The port, which also lies adjacent to the North West Suez Economic Zone (NWSEZ), is a state-of-the-art maritime facility, seamlessly integrating cutting edge technology with the latest management and security skills.

Situated directly on the busy East-West trade route, DP World Sokhna is perfectly placed for the handling of maritime traffic into and out of Egypt and the wider region - and to other markets around the globe. DP World Sokhna boasts four quays, each easily able to handle cargo flows of up to several million tons. The IT Department only serves Al Sokhna port department and it is an Internal Service Provider as shown in figure 1 above.

### **3.3 Nile.com**

Nile.Com Company can be introduced by its profile intro which was written by its chairman Mr. Ahmad S. Anwar. He says "We established Nile.Com SAE in 1999. Back then, Nile.Com consisted of a small privately owned stock holding company operated by a few employees. Our activities evolved around hardware and software systems sales as well as technical services provision. However, we were aiming high by having a clear-cut strategic plan: to become one of the top and most successful players in the ever changing and greatly challenging field of communication and information technology.

10 years later, after having expanded and relocated twice, that plan has become a reality: Nile.Com with a proven record of achievements was able to secure a high ranking within this dynamic competitive market by creating and successfully building top notch specialized teams who seek not only customers' satisfaction but also meeting vendors' objectives.

Now Nile.Com is considered one of the best ICT professional services providers in Egypt due to their achievements and their customers' feedback. The services Nile.Com provides to its customers are:

- 1-Infrastructure Solutions
- 2-Security Solutions
- 3-Business Continuity Solutions
- 4-Virtualization Solutions

NileCom Company serves many customers in the market and this is why it is considered External Service Provider as shown in figure 3 above.

## **4- ITSM IMPLEMENTATION METHODOLOGY BASED ON ITIL VER.3 FRAMEWORK**

Although ITIL V3 contains best practices for any IT service, it does not cover how to implement ITIL in any organization as it covers WHAT and does not cover HOW. This paper will cover a

methodology which covers the implementation for ITSM based on ITIL V3 by combining many techniques and methodologies. The methodology consists of the following seven steps.

#### 4.1 Define Current Processes and Needed Processes

It is well known that ITIL V3 has divided the IT lifecycle to five main stages which have about twenty main processes which cover all the aspects of an IT Service that could be at any company whether it is a small, medium or big company and they are shown in figure 5. Although these twenty processes cover all the lifecycle of any IT Service, no one can assume that all these processes must be found in every business.

Small business may include some of them while large and huge companies may include many if not all of them. For example in a small company which has a very small IT department it will be very difficult to find at all Service Catalog Management [12] which is a process responsible for having and maintaining a catalog which has accurate and updated information about all the current service provided by the service provider to its customers or Service Level Management (SLM) [13] process which manages the levels of the services the customers get from the service provider. While in a world class mobile operator which exists in many countries, each country will have a separate Service Catalog and Level Management process. In this dedicated Service Catalog there will be all the services provided to the people of this country. Maybe at the head quarter there will be a central Service Catalog containing all the service packages in the many dedicated Service catalogs in all the other countries including all their features and pricing. Also for the SLM process there will different service levels in each country according to the level of needs in the customers of this country while there will be some levels decided by the head quarter to be followed by all the other countries.

We start our research by discovering the existing and needed processes. There will be three types of processes which are: current processes, needed processes and unnecessary processes as they are not required by the business or are bigger than the maturity of the IT department.

#### 4.2 Documenting Current Processes

After we define the current and needed processes there must be documentation for every existing process to know all about its activities and components. To define the process at this stage there should be a clear methodology to be a standard for documenting any process found in IT department. As mentioned in **The ITSM Process Design Guide** [14] process documentation should include seven components which we consider a good start for documenting any process in a small or medium company and they are:

- **Policy** - which controls the process and how it works. It includes also the targets of the process which are approved and recommended by the top management.
- **Narrative** - which tells the story of the process by stating its goal and objectives and how it works
- **Roles and Responsibilities** - which assign specific people to specific activities and it can use the RACI model [15] which stands for Responsible who is responsible for doing, Accountable who is managing, Consulted who should be consulted and Informed who is informed about status and updates to clarify the authority organization
- **Process Overview** - which describes how the process starts working from the input to the activities inside the process to the value which is the output of the process.
- **Process Maps** - which depicts the process in a drawing or diagram to make it easy to understand its internal components and its external relations.

- **Activities** - which are the tasks to be done so that the process can be operational. All these activities must be assigned to specific people.
- **Vocabulary** - which is the meaning of every word mentioned in the description of the process to make it clear to everyone whether he or she is specialized in the process and its technologies or not.

At the same time processes at big companies will need more details in the documentation. The sample process documentation mentioned in the ITIL V3 core publication Service Design [16] by The Stationery Office (TSO) will be enough as it includes a sophisticated structure and it includes:

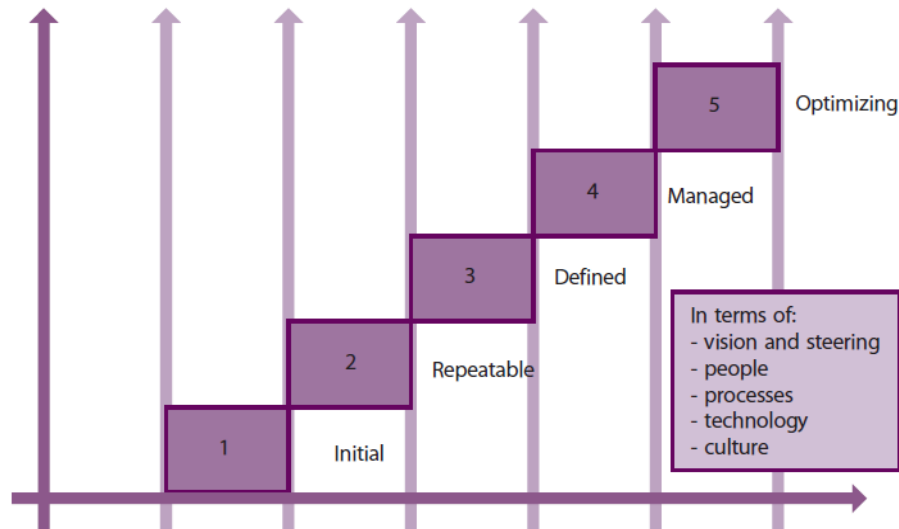
- Process name, description and administration (documentation administration: version, change control, author, etc.)
- Vision and mission statements
- Objectives
- Scope and terms of reference
- Process overview: Description and overview, Inputs, Procedures, Activities, Outputs, Triggers, Tools and other deliverables and Communication
- Roles and responsibilities: Operational responsibilities, Process owner, Process members, Process users and Other roles
- Associated documentation and references
- Interfaces and dependencies to: Other SM processes, Other IT processes and Business processes
- Process measurements and metrics: reviews, assessments and audits
- Deliverables and reports produced by the process: Frequency, Content and Distribution
- Glossary, acronyms and references.

We believe that in some cases some processes may need another more customized model for documenting them. In the three companies we did not find any of these processes which may need special customization at all.

### **4.3 Use ITIL PMF to Measure Current Processes**

We must measure the current processes to decide if they need improvement or redesign. If they are good they may need to be better to increase their effectiveness and efficiency to a higher level which makes it hard for competitors to reach to. If they are poorly documented, un-followed by the IT staff or un-sufficient for the ever changing needs and requirement of the customers, We must radically redesign in a proper manner. At the same time there could be some cases in which the business does not have processes at all and needs to start from the beginning.





**FIGURE 6:** ITIL V3 PMF [17]

There should be a framework which covers how to assess a process. We use ITIL Process Maturity Framework (PMF) as shown in figure 6 in our assignments to measure process maturity and to know from where to start the improvement plan. ITIL PMF divides the process maturity into five distinctive levels which are Initial, Repeatable, Defined, Managed and Optimizing. The existing processes in any company will be assessed by the ITIL PMF to know at which level each process is living and what are the opportunities available to raise it to a higher level.

In the **Initial** level the change resistance to process development will be at the highest levels as IT staff is not acquainted with process and process management. To develop processes found in this stage there must be management commitment and resources allocated to the development plan. Unfortunately many companies have many processes at this initial stage in Egypt as process management is a new concept for them.

The second level is **Repeatable** where the IT department and the whole company start to gain more care about processes and knowledge but they are just starting. Processes in this level may need to be developed and may need to be radically redesigned totally to improve it. There are many challenges at this level like deciding from where to start and having dedicated resources to implement improvement. Change resistance at this level is not high as the whole company accepts to be improved in many sides and one of them is the IT.

The third level is **Defined** where the processes start to be clear and their development are accepted widely. The process at this level is more mature and can be developed more easily than the first and second levels but change resistance still exists. Management is supporting the IT processes powerfully and is expecting more order and organization to be seen clearly in the performance of IT department.

The fourth level is **Managed** which is a high level as IT processes are managed clearly. This level is not easy at all to be reached as it needs total agreement and approval from all IT staff and the company management to achieve high compliance to quality management in this department and its functions too. The maturity at this level needs to be always measured and maintained so that the good efforts are not wasted and lost. At this level IT staff has to be continually improved and trained to keep the level of the IT services. Also the company may have internal or external audits and monitoring.

The fifth and highest level is **Optimizing** which is not easy at all to be reached and very hard to keep. To have the processes in this level this means that the whole company believes in process maturity importance and the greatness of the effects of the process maturity on the whole business.

The PMF is not a new or strange framework as it has the same levels and their names of the Capability Maturity Model Integration (CMMI) [18]. PMF and CMMI have five levels while at the same time the ISO/IEC 15504 [19] has six levels but with different names. We preferred to use the PMF as it will suit the ITIL implementation most instead of integrating any other maturity model.

#### **4.4 Improve Current, Develop New or Redesign Old Process**

At this point any company could have one of four types of processes which are:

- 1- A needed process
- 2- A current process which needs to be improved
- 3- A current process which needs to be radically redesigned
- 4- A current process which is sufficient for business and does not need any improvement

At this point any Egyptian company starts to believe in the process management and its importance so there will be many processes which will be needed and they will be designed from scratch. The problem at the same time will not be in just convincing the IT staff of the new processes and how they will improve the quality of the IT service, but it will be also in convincing the client to deal with the process and its tools and applications. Although the client is a very important stakeholder and the one who gets the most benefits, the client will not accept any guidance in using the new processes easily. Many companies have some processes which may be good and effective but need some improvement.

All the points mentioned above in Defining and Documenting Current Processes part will be developed for each process with a sense of customization as every company has many processes and each one of them has special characteristics and requirements. This is why every process will need a sort of customization even to the default definition or documentation provided by ITIL framework. The level of customization will depend on the nature of the company, the services it provides and the customers and their level which will be captured through surveys, questionnaires, needs assessment and meetings with the stakeholders.

This methodology deals with the first three types of processes mentioned above and the fourth only needs continual improvement to always satisfy its stakeholders' needs. For the first type which is which is a needed process the stakeholders will be defined and a meeting with them will be arranged whether together or separately to decide what are the process goals and objectives, inputs, outputs, needed resources and capabilities and its internal activities. After we collect all this info it will be easy to draw a diagram showing the process and all its components. We arrange a second meeting with all the stakeholders to show them the process diagram and if they agree we move to the next step and if they disagree we start a discussion about what is missing or is unnecessarily added. The next point will be starting documenting the process and all its components and interfaces to be standardized and show this new documentation to all the internal stakeholders to approve it and publish it internally to be available to all employees and specially the IT ones. Then the roles and responsibilities will be arranged in a RACI model and all its members will approve their roles to have a consensus about how to run the process and improve it accordingly. The most important point is to define a quarterly meeting for discussing the process and its efficiency and effectiveness and there will be an annual meeting to renew the documentation of the process. Throughout this year in the lifetime of the process any change will be controlled by the change management process.

For the second type which is a process which needs improvement there will be a meeting with all its stakeholders to collect all their goals and objectives and then collecting all the information available about it and all components to know where is the shortage. A gap analysis will be developed to know where the process is now and where it should be and a plan will be developed to narrow the gap or eliminate it if possible. The plan will be presented to the stakeholders in a meeting to get their feedback and acceptance combined with funds and responsibilities controlled by a top management commitment. The plan could have many solutions which may cover staff training, using new tools and technologies, managing the process interfaces better, building a RACI model for the process activities and many others. After the plan completes and succeeds the process documentation will be prepared and get approved and the whole process will be under the control of the change management process.

For the third type which is a process which needs to be radically redesigned there will be some additional work to the activated done for type two above as needs assessment will be conducted with all the stakeholders to define their needs clearly. The current process is refused from those stakeholders and there should be reasons for this and we must collect all these reasons before thinking in redesigning the process to have effective design. When the problems of the current process are discovered and agreed upon from all its stakeholders one or more solution will be presented to them and if they agree to develop one then the same steps we use in type two above will be used to complete the redesign of the process.

Also the process can have some drawings to make it clear to all the stakeholders including the client, the process owner, the service provider management, the technical staff including the service desk, infrastructure and application teams too and even the supplier if it is possible. We draw process map to make it easy for its stakeholders to understand it in a single glance instead of reading too much. ITIL V3 framework has provided us with some process maps like the Incident Management process map in figure 7 below which may be enough for the need of a company or which may need customization for some companies like the Incident Management process map in figure 8 below and at the same time there are some process maps which are not covered by ITIL so we have to start from scratch to develop them.

The three types covered above will need two shared activities and the first one is delivering awareness sessions to everyone inside the service provider and maybe the suppliers and customers about ITIL and its processes and functions which are teams of people who are asked to do specific work to achieve specific output. The second activity is giving the IT staff ITIL V3 training courses and examination to raise their level of knowledge and experience to manage the new and redesigned processes effectively after we complete our development and deliver the processes to them as there should be some staff development program in place as the staff needs development and training to be able to manage or follow a process. In some cases the existence of a software suite whether for the Service Desk or any other function will make the development result appear soon if there is no problem in using it by the users or a change resistance in using it from the beginning.

#### **4.5 Define Strategy, Critical Success Factors (CSF) and Key Performance Indicators (KPI) for Each Process.**

While we are developing current processes or designing new processes we start documenting the process as it is very important because having a process with no documentation is like having no process at all. A process needs a defined strategy to control it and to make it clear why this process must exist by mentioning its goal and objectives to make the need for it clear.

Each process has some or many success factors which control its quality. At the same time each process must have at least one if not two or three CSFs and it is our role to discover them and write them down. Although the client of a service may bear losing one or maybe two of the success factors he will never accept the absence of only one CSF. This is why we document and publish CSFs to all the employees of the service provider and specially the IT Staff.

KPIs are also important at this stage as they will help the process owner who is responsible for the process success and service owner who manages the service and all its components to measure the level of the process efficiency and effectiveness. We define the KPIs at the start of designing the process so that the process owner can use them effectively to manage it as there is a principle of Dr. Deming [20] in the ITIL which states that "If you cannot measure it, you cannot manage it" [15] and this is why KPIs are used to decide the measurement systems and their outputs.

After some time the KPIs, CSFs and process maps need to be changed and improved as the service is changing all the time to cover its customer's ever changing business needs and this is why we write in each process documentation the date of checking the suitability of documentation and the process to be followed in case a change is needed.

For example the selected Service Desk KPIs are:

- Number of Incidents
- % of Incidents answered within defined timeframe
- First-call Incident resolution rate
- Average number of calls / service request per Service Desk Agent
- % of escalated Incidents
- % of unresolved Incidents
- Number of Service Requests
- % of First line service request closure
- % of reopened service requests
- % of escalated service requests to other functions

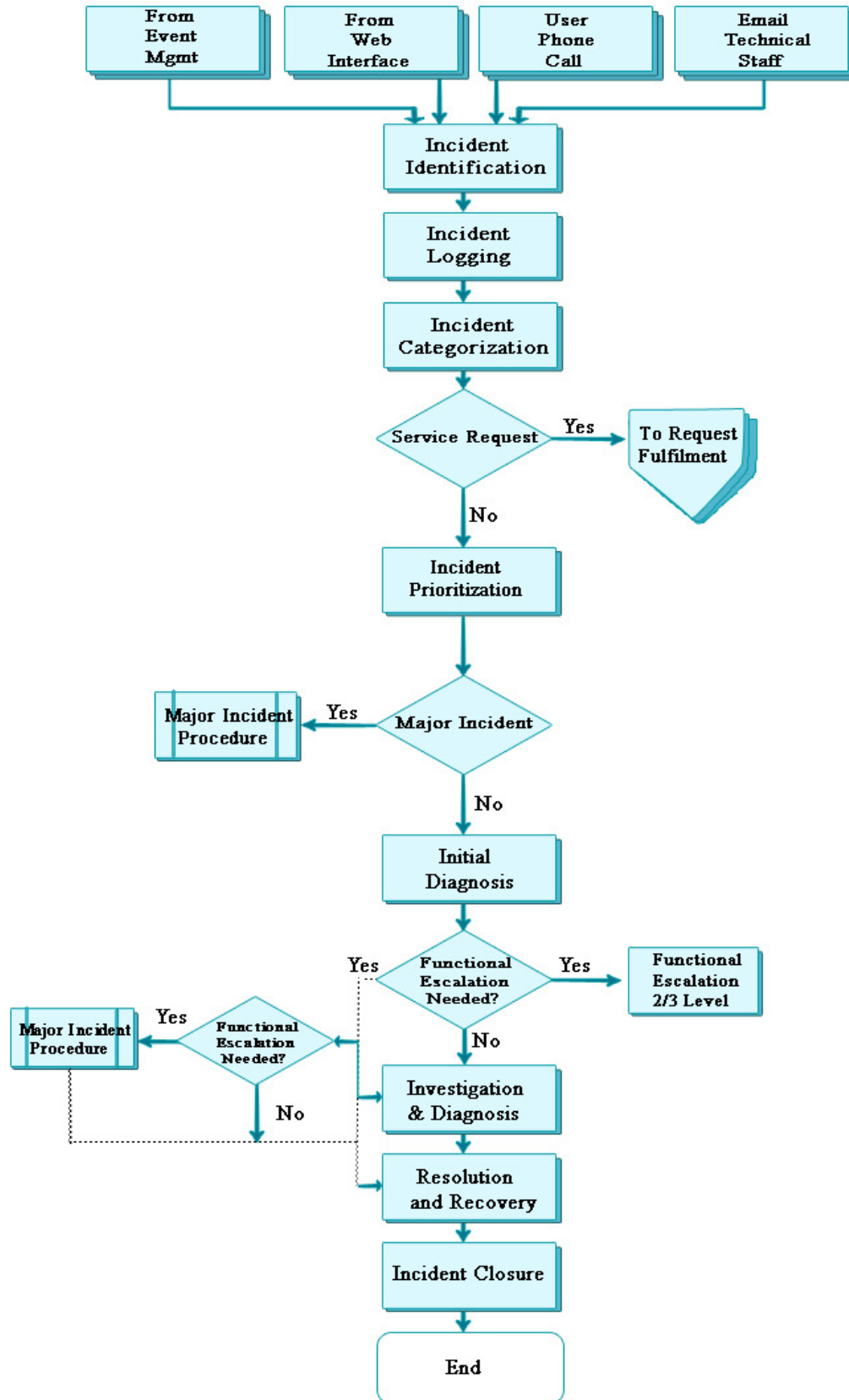


FIGURE 7: ITIL V3 Incident Management default Process [21]

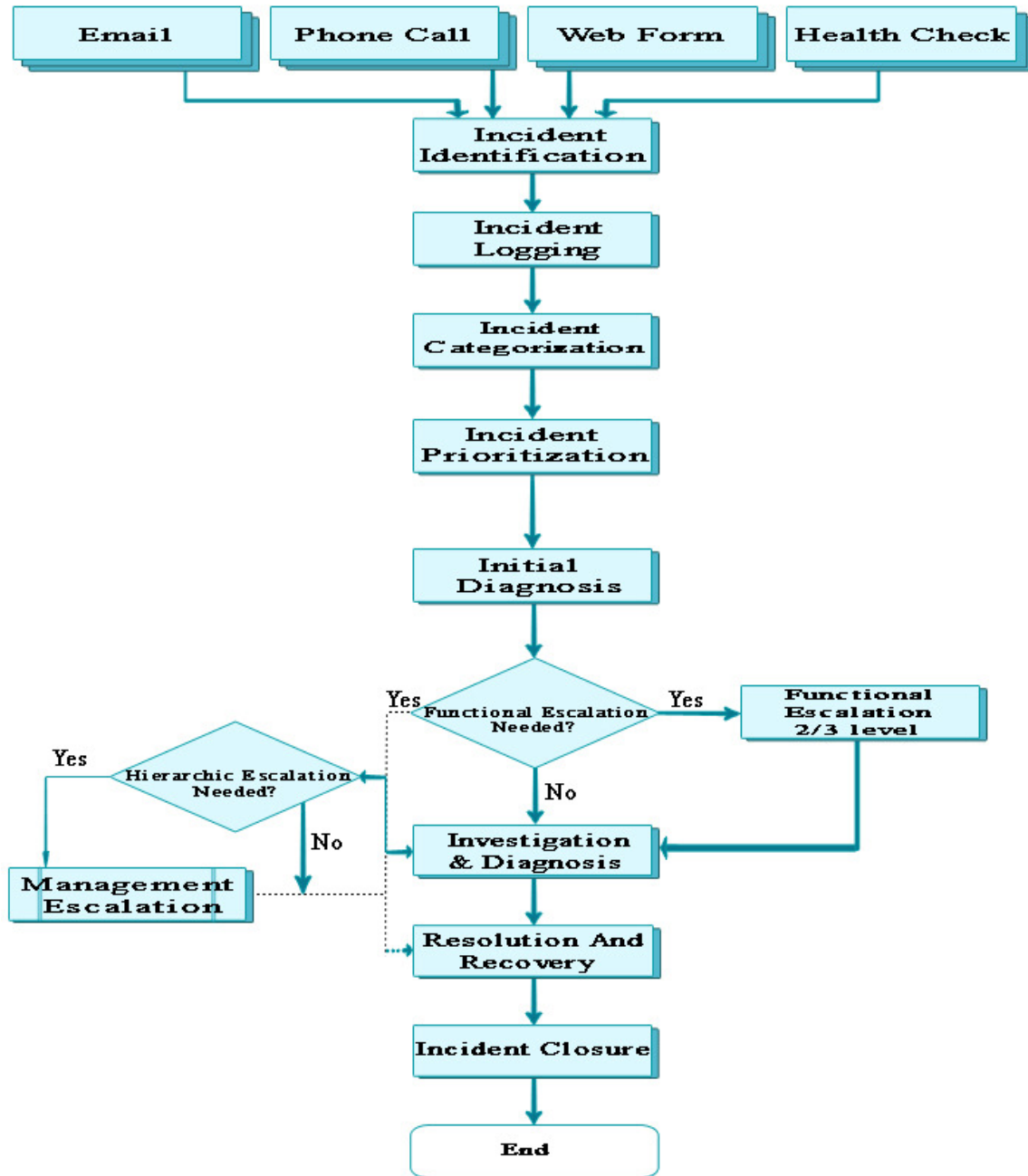


FIGURE 8: ITIL V3 Incident Management customized Process

#### 4-6. Building Metrics to Measure Main Functions and Processes

The ITSM Process Design Guide [22] has a ten steps metric program which describes how to create suitable metrics in an easy way without any complication or buying any expensive software. We are using this technique for three years now and it is a very successful one. At the beginning of the implementation the first four or five steps will be easy to be accomplished and the others can be developed in the later stages as they are more advanced than the first ones. These simple ten steps we have arranged them in a flow chart and they are shown in figure 9 below:

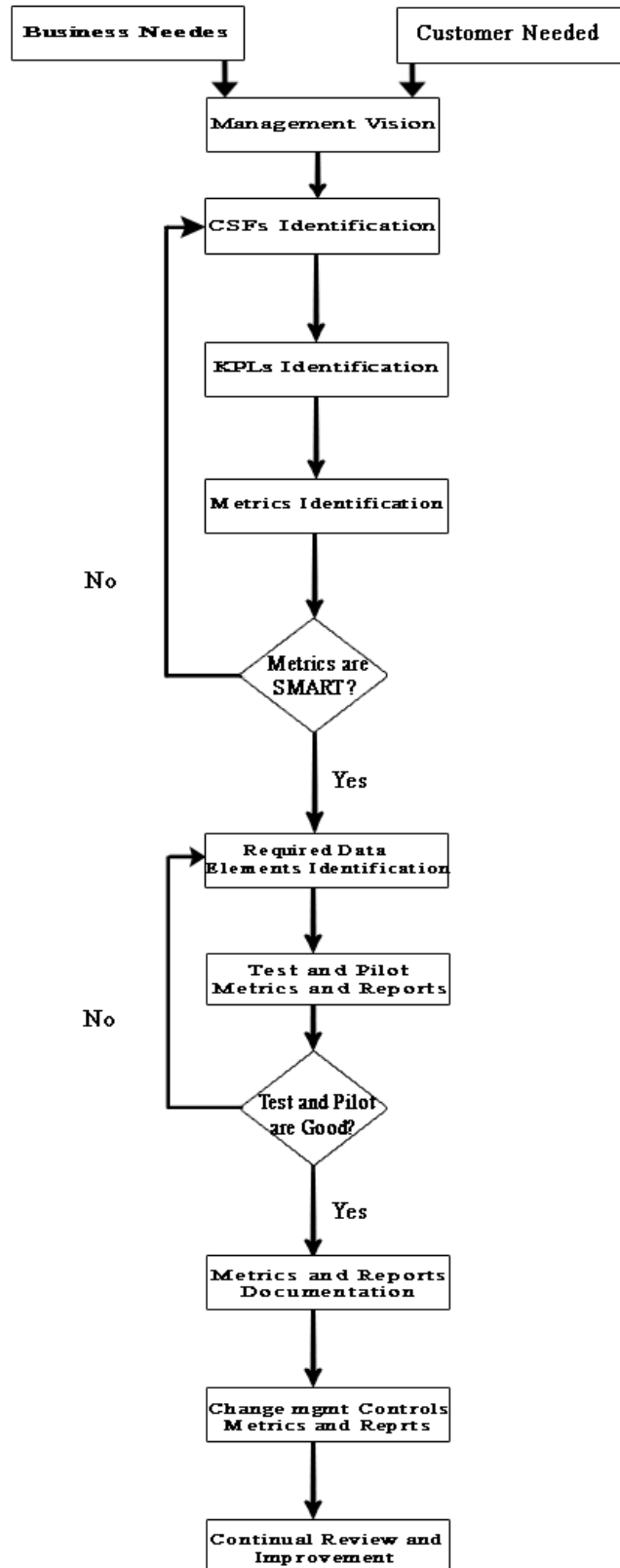


FIGURE 9: ITIL V3 Incident Management customized Process

After applying these simple ten steps the company can have suitable metrics which can measure the efficiency and effectiveness of any process or function to be able to manage them.

#### 4.7 Use ITIL PMF After the Implementation to Measure Improvement in Processes

When the design, redesign, development, documentation, drawing of process, stakeholder awareness about ITIL and IT staff training on ITIL are completed there must be some kind of improvement. There could be no improvement and this could be due to a wrong theory or to wrong implementation. To measure this improvement we use the ITIL PMF again to calculate the difference between the process before the implementation of this development methodology and after it.

Not all the processes will have significant improvement after the first try, and this is why continual improvement is required. At the same time while the maturity of a process increases the maturity and experience of the process owner increases too. Not only the service and process owners will feel the improvement of a process but also the client and in some cases the supplier as well. The ITIL PMF will be used to guide the decision makers to decide if the time, resources and money spent were enough or not and if there is any Return On Investment or not.

### 5 EXPERIMENTAL RESULTS AND PERFORMANCE EVALUATION

This methodology has been used in three companies in Egypt which are ASCOM, Nile.Com and DP World for the incident, problem and change management processes and it succeeded very much with the three and the levels of PMF before and after the implementation prove its success as shown in the next table:

Participating Company	Process	PMF Level Before Implementation	PMF Level After Implementation
ASCOM	Incident Management	First Level Initial	Forth Level Managed
	Problem Management	First Level Initial	Forth Level Managed
	Change Management	First Level Initial	Forth Level Managed
DP World	Incident Management	Combined processes first Level Initial	Third Level Defined
	Problem Management		Third Level Defined
	Change Management	First Level Initial	Third Level Defined
Nile.Com	Incident Management	Combined processes first Level Initial	Forth Level Managed
	Problem Management		Third Level Defined
	Change Management	NA	Third Level Defined

**TABLE 1:** The PMF levels before and after implementing the methodology.

Now the three companies have documented processes which are used to manage their IT services and are baselined with RACI model to define authorities. Whenever any change is needed to the process or its documentation the change management process will control it to have stable environment. All the processes now have diagrams, CSFs, KPIs, SLAs, OLAs and review meetings to control their efficiency and effectiveness.



The three companies have decided to use a software solution for ITSM and there were many comparisons among many vendors and their software. While there are big vendors like IBM, HP and Microsoft there were many other small vendors with simple and cheap solutions. The three companies have chosen to use tools from other vendors as ASCOM and DP World have decided to use Service Desk Plus by Manage Engine and Nile.Com has chosen System Center Service Manager by Microsoft.

Participating Company	Chosen Software Tool	Software Tool Vendor	Implementation
ASCOM	Service Desk Plus 8.0	Manage Engine	Implemented
DP World	Service Desk Plus 8.0	Manage Engine	To be implemented next year
Nile.Com	SCSM 2010	Microsoft	To be implemented next year

**TABLE 2:** The participating companies' chosen software tool, vendors and implementation status.

The three participating companies tried to develop and use both Service Level Agreements (SLA) which is described by the OGC as "An SLA is a written agreement between an IT service provider and the IT customer(s), defining the key service targets and responsibilities of both parties." [23] and Operational Level Agreement (OLA) which is defined by the OGC as "An OLA is an agreement between an IT service provider and another part of the same organization that assists with the provision of services" [2 3] to control relations with customers and internal technical functions but not all of them could achieve this target. The next table will compare between the three participating companies:

Item	ASCOM	DP World	Nile.Com
SLA	Implemented	Implemented	Implemented
OLA	Implemented	Will be implemented in the 3 <sup>rd</sup> Quarter	Will be implemented in the 3 <sup>rd</sup> Quarter

**TABLE 3:** SLA and OLA implementation status.

ASCOM Service Desk KPIs in just six months after implementing the methodology are:

- Number of Incidents 2780
- 90 % of Incidents answered within defined timeframe
- 99 % First-call Incident resolution rate
- Average number of calls / service request per Service Desk Agent 659 (4 Agents)
- 1 % of escalated Incidents
- 0 % of unresolved Incidents
- 90 % of First line service request closure
- 1 % of reopened service requests
- 1 % of escalated service requests to other functions

ASCOM IT manager considers these KPIs a great improvement as ASCOM did have any process documentation, RACI model, KPIs or CSFs before six months. The other two companies are waiting for the new budget to buy the selected software and to complete the Service Desk part in the ITSM implementation project.

The three companies now have better process to manage their IT services and have better customer satisfaction. Now they are thinking in implementing the other ITIL processes in the near future to have the best practices in IT service management in preparation for ISO/IEC 20000 certification.

## 6 COMPARATIVE EVALUATION

One of the best sources of process development theories is the book The ITSM Process Design Guide [24] by Donna Knapp which has ten chapters covering all the topics of process developing, reengineering and improving following an introduction to quality management principles. This book is very good for the use of reference for those who are interested in learning how a process design engineer but it does not give any scenario or case study from real world with a comparison of the as-is and to-be states as this methodology does for three companies with different types and size.

Also it has described many techniques for defining and analyzing customer requirements, process design and improvement tools and IT Service Management Technologies which qualifies it to be a reference instead of a simple to follow methodology.

- It has ten steps for process design and improvement and they are:
- Determine management's vision and level of commitment
- Establish a project and form a project team
- Define the process and identify customer requirements
- Document the "As Is" process and baseline current performance
- Assess conformance to customer requirements
- Benchmark current performance
- Design or redesign process
- Solicit feedback, fine-tune and finalize the design
- Implement the new process
- Assess performance and continually improve.

In these ten steps the writer did not use PMF to measure the process before and after process development as our methodology does and she used the conformance to the customer requirements before the development and the performance after it although she has mentioned the PMF before as a measurement techniques.

Knapp has paid attention to awareness and training as we did but there is a big difference between the needs of the companies in USA and those in Egypt and other Arab countries as in USA ITIL and other frameworks are known and used for many years now and many companies have ISO/IEC 20000 certification while in Egypt and other Arab countries ITIL is a new framework and there is a few number of companies or individuals who know It or are able to implement it in an environment which fight change by all the strengths it has.

## 7 CONCLUSION

Although ITIL V3 is considered the best public framework which includes the best practices in the IT field, it provides its readers with only the theory and not the implementation methodology. This is why we tried to create a methodology based on many fields like System Analysis and Design, Project Management, Advanced Software Engineering and Process Design Engineering and this is one of the reasons of the success of this methodology. This methodology succeeded three times in the three companies mentioned above and it can be developed more and more according to the needs of the company which needs the development.

## 8 FUTURE WORK

In the future we will try to develop a software for Service Desk including many ITIL V3 processes using a web portal like Microsoft SharePoint portal [25] which combines many features and can be customized too and publish it on a public cloud [26] by using the infrastructure of the public cloud provider as an Infrastructure as a Service (IAAS) [27] and offer it to many companies in a pay-as-you-go model and as a Software as a Service (SAAS) [28] to reduce the cost of implementing ITSM using many software solutions with very high costs and having many IT staff to run and manage them.

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