

Maturity Status of ITIL Incident Management Process among Saudi Arabian Organizations

Omar AlShathry

Department of Information Systems
Imam Mohammed Bin Saud University
KSA

Abstract

Incident Management is an intrinsic IT process that is visible to both customer and businesses. Organizations should proactively adopt a healthy IT service management framework like ITIL so as to maintain the desired Quality of Service (QoS). There is very little published work about the maturity level of ITIL processes among Saudi Arabia organizations. This research examines the maturity of incident management process of a selected Saudi organization using a common assessment tool. Findings showed relatively low maturity levels among the selected organizations, albeit having fairly well-formed process structure and efficient reporting metrics. Interaction of incident management process with the direct/indirect supportive process groups were not seen apparent within the sample organizations.

Keywords: ITSM, ITIL, Process Maturity.

1. Process Assessment

The term “process” has evolved dramatically since the pre-historic times when people relied on themselves to produce the products they need (Dumas et al., 2013; Harmon, 2015). Generally, a process is defined as a sequence of activities that convert input into output (AlShathry, 2016). In a business term, business process consists of set of independent activities that are purposefully structured to deliver a specific output which can be an event, input or a trigger to other business applications or human actors. Rosemann and Brocke (2015) defined two set of processes: (1) core processes; (2) support processes. Core processes include processes that are linked in the creation of value product/services to the organization. The support processes, on other hand, are processes that enable the creation of 1st category processes, such as: human resource, IT infrastructure procurement etc. (Rosemann & Brocke, 2015).

In some cases, a process may not execute the way it is intended to, due to many reasons. Some automated processes were designed based on what IT people think rather than what the guidelines states. This lack of conformance is captured by either a complaint from the business function this process is linked to its output, or reflected by noticed service degradation. Therefore, a process owner should proactively monitor the process execution via periodic assessments (Buijs et al., 2013). Process Assessment is a diagnostic check of a process performance against a set of standards or criteria (Munoz-Gama et al., 2013; van der Aalst and Verbeek, 2014). In order to perform a process assessment; there are two aspects that come to one’s mind, a process maturity or a process improvement. These two terms are incorrectly used interchangeably by researchers and practitioners to refer to the same goal. The main focus of process improvement is on the performance aspects of the process: cycle time, bottlenecks etc. (AlShathry, 2016).

Maturity, on other hand, means the ability of a process towards a class of application domain portrayed in a level-based sequence or maturity levels (Becker et al, 2000; Renault, Cortina and Barafort, 2015). It acts as a reference for obtaining adequate levels of performance and QoS. Maturity models are designed as set of levels each of which has its own requirements that have to be addressed for an organization to be named compliant to that level. The current level of an organization describes its business capability and how this capability can evolve by achieving higher levels of improvement. Generally, there are 5 maturity levels which are common to both researchers and industry professionals, which are: (1) Initial, (2) Repeatable, (3) Defined, (4) Managed and (5) Optimized (Becker et al, 2000).

An improved process may not mean it is matured as maturity refers to the performance of the process in association with the other business processes. This concept is not taken into account in the process improvement. This research focuses on the process improvement aspect of process assessment where the point of interest is only the process itself.

There are plenty of process assessment frameworks for ITIL processes like ITIL Process Maturity Framework (PMF), TIPA, itSMF etc. Criticisms were received against relying on self-assessment tools for process assessment related to many unforeseen issues. One of the main problems with adopting such approach is its lack of objectivity (AlShathry, 2016), as those who conduct the self-assessment are usually from the same organizations. Also, the required skills needed for assessment may not be available or not sufficiently exposed to them. Therefore, organizations may decide to go for external assessment instead, for more credible results. However, this option may not also be drawbacks free; not only because it is budget and effort intensive, but the required knowledge about the process to be audited, which is essential for accurate assessment output, is missing or fragmented among process users

2. ITIL Incident Management Process

This research examines the maturity level of incident management process of selected Saudi Arabian organizations. ITIL is recognized globally as a collection of the best practices that can be used in information technology management (Galup et al., 2009; Moeller, 2013). There are other models for IT Services Management; for example, ISO 20000, CMMI-SVC, COBIT, PRINCE2 and eTOM (Mesquida et al., 2012). ITIL framework has evolved to meet the various issues facing organizations today (Renault, Cortina and Barafort, 2015). It began when Her Majesty government in the United Kingdom raised the concerns about the quality of services gained from its IT project (Adams, 2009). The core philosophy of ITIL is to respond not only to technological changes but also to the diverse needs of a business in the current dynamic market. The latest version of ITIL (V3) comprises 26 processes grouped in 5 domains of service life cycles (Adams, 2009). Each core domain addresses a capability which has a direct impact on service providers with proper principles, methods and tools. It provides guidance to service providers on the provisioning of quality IT services, and on the processes, functions and other capabilities needed to support them. One of the most common ITIL process and has the top priority of adoption by organizations, is the incident management processes. Incident which is, according to ITIL handbook (Adams, 2009) defined as "the unplanned interruption to an IT service" is managed in this process by a set of procedures through its life cycle from the incident identification to its closure (Mesquida et al., 2012). The main purpose of incident management process is to restore the normal service to the end-user as soon as possible. Maintaining an efficient incident management process is one of the critical tasks for an organization's IT support. According to ITIL v3 reference model the incident management process consist of different steps as listed below:

1. Incident identification: this step is the trigger of the incident management process, it starts once an incident occurs and an issue is reported.
2. Incident Analysis & Classification: it starts by logging the incident along with its technical and business description.
3. Investigation and Diagnosis: this is where incidents are investigated for their cause, impact and possible solutions.
4. Resolution and recovery: when the solution of a reported issue is identified and tested, the team can start recover the service back.
5. Incident closure: the service desk team will ensure that the workaround given to the user.
6. Incident Monitoring: the service desk team will monitor the workaround of an incident for its reliability and efficiency.

There has been wide number of studies focusing on the assessment frameworks for ITIL processes or the incident management in particular (Saarelainen & Jantti, 2015; Denda & Drajjic, 2013). Trinkenreich et al. (2015) proposed a business intelligence-based model for improving the incident management process. Suhair and Gaol (2013) suggests using Statistical Process Control (SPC) as a main approach for the assessment of incident management process. Jantscher, Schwarz and Zinser (2015) proposed business impact-based framework for incident prioritization. Cortina, Renault and Picard (2014) used TIPA framework to assess outsourced IT processes.

3. Sample Organizations

This research selected 7 organizations from varied sectors in Saudi Arabia to examine and analyse the maturity and conformance of their incident management process towards ITIL best practice. The main criterion of selection is that all organisations are considerably large ones, and have fairly large IT workforce. The selection was based on convenience sampling where the ease of contact and interviewees availability are the main factor for selection. [Table1](#) depicts an overview of the surveyed organizations.

Table 1: Surveyed Organizations Overview

Organization Name	Business URL
General Organization for Social Insurance(GOSI)	http://www.gosi.gov.sa
King Fahad Medical City (KFMC)	https://www.kfmc.med.sa
Saudi Arabia Basic Industries Corporation(SABIC)	http://www.sabic.com
PUBLIC PENSION AGENCY	http://www.pension.gov.sa
King Saud University	http://www.ksu.edu.sa
King Abdullah International Medical Research Centre(KAIMRC)	http://www.kaimrc.med.sa
National Water Company	http://www.nwc.com.sa

From every sample organization shown in [Table1](#), 5 interviewee were selected each of whom represent a major business function within the incident management spectrum. The scope of the interviewee was based on their exposure to the incident management process. Based on literature review and self-judgement, the following classification of IT incident management business roles were identified [Table2](#).

Table 2: Interviewee Business Roles

Business Role	No. Interviewees
IT help-desk Supervisor	1
IT help-desk Agent	1
IT Service Desk Manager	1
Performance & Reporting Manager	1
Support group members	1

Needless to say that not all of these business roles were represented independently by different employees in the surveyed organizations. Therefore, in some organizations the interviewee was questioned twice to give his/her feedback for the two business roles he/she represent. For example, in three of the sample organizations, the service desk manager is also the one who performs the reporting and audit tasks. Moreover, the naming of the business roles also vary between organizations, for example; in some organizations there was no such reporting manager but is called instead Quality Control & Change Management Manager.

3.1 Methods of Assessment

Feedback of every interviewee from a single organization was duly logged into the self-assessment tool ([Figure1](#)). This research adopts self-assessment tool by UCISA (Mathews & Tinson, 2013), which consists of 42 points of a scale from (1→5), mapped qualitatively into the five maturity levels and classified into the 4 main assessment components:

- Incident Management Process: this category addresses the establishment of the incident management life cycle in an organization. It also accounts for the process policies charts etc.
- Activities in Place needed for the Success of Incident Management: this category is about the extra advanced required structuredness of the incident management process that guarantee efficient performance like the presence of active escalation mechanism and knowledge base etc.
- Incident Management Metrics process: KPI's, Reports and performance metrics.
- Incident Management Process Interactions: The integration of incident management with other supportive functional areas within the organization like problem management, root cause etc. These 4 maturity dimensions will be assessed against their enablement within the sample organization so that the picture of the current status of the incident management efficiency is known.

Step 1 - Enter the names of the participants here :
 A,AJ
 F,J
 F,M
 U, D
 M, O

1	The Incident Management Process	A,AJ	F,J	F,M	U, D	M, O	Total	Count	Avg
1	We have defined Incident Management's Purpose, Goal and Objective	3	3	5	5	5	21	5	4.2
2	We have defined Incident Management's Scope	5	3	5	5	5	23	5	4.6
3	We have defined Incident Management's Value to the business	5	5	5	5	3	23	5	4.6
4	We have defined Incident Management's Policies, Principles and basic concepts	4	5	5	5	5	24	5	4.8
5	Timescales are agreed for all incident handling stages	3	5	5	5	5	23	5	4.6
6	Incident Manager/Process Owner is in place	4	5	5	3	3	20	5	4
7	Incident Models are defined	5	5	3	2	4	19	5	3.8
8	Major Incidents are defined	3	3	4	3	3	16	5	3.2
9	A Major Incident Procedure has been developed	3	5	3	2	2	15	5	3
10	The "Incident Identification" process activity is specified	2	5	3	5	3	18	5	3.6
11	The "Incident logging" process activity is specified	3	5	4	4	4	20	5	4
12	The "Incident categorisation" process activity is specified	3	5	3	2	4	17	5	3.4
13	The "Incident Prioritisation" process activity is specified	4	5	5	4	2	20	5	4
14	The "Initial Diagnosis" process activity is specified	5	3	4	4	4	20	5	4
15	The "Incident Escalation" process activity is specified	4	4	4	4	2	18	5	3.6
16	The "Incident Identification" process activity is specified	3	4	4	3	3	17	5	3.4
17	The "Investigation and Diagnosis" process activity is specified	5	3	3	2	3	16	5	3.2
18	The "Resolution and recovery" process activity is specified	5	5	4	4	3	21	5	4.2
19	The "Incident Closure" process activity is specified	2	3	3	2	5	15	5	3
20	We have defined Incident Management's Triggers, Inputs, Outputs and interfaces	5	4	5	5	2	21	5	4.2
21	We have defined Incident Management's Information Management reporting	2	3	5	4	3	17	5	3.4
22	We have defined Incident Management's Challenges, Critical Success Factors and Risks	3	3	5	2	2	15	5	3
23	Self-service Incident logging is in place	1	4	4	4	4	17	5	3.4
24	Incident tracking is in place	3	2	3	2	3	13	5	2.6
25	Incident ownership is understood and in place	4	3	2	3	4	16	5	3.2
26	Data entered into incidents at all stages is checked for completeness	3	2	4	5	2	16	5	3.2
27	Incident Management Process review procedure is in place	2	5	2	5	4	18	5	3.6
SCORE		94	107	107	99	92	499	135	3.70

Figure 1: Maturity Assessment Tool

4. Result

The aggregation of all scores for all the sampling organizations interviewee w.r.t to the 4 component resulted in the following averaged scores [Table3.](#)

Table 3: Assessment Result

Maturity Components Maturity Levels	Initial	Repeatable	Defined	Managed	Optimizing	No. Responses	Average Score
The Incident Management Process	7	147	273	217	301	945	3.7
Activities in Place Needed for the Success of I. M.	28	63	112	21	21	245	2.8
Incident Management Metrics	0	14	42	42	7	105	3.4
Incident Management Process Interactions	28	77	56	7	7	175	2.6

As shown in (Table 3) the overall performance of the incident management process in the sample organization is average for most of the assessment component. The highest score, albeit lower than maximum maturity value of 5, is for the incident management process with a value of (3.7). This entails that most of the sample organizations have well-structured process and established the requirements of the incident management process as advised by ITIL standard. The majority of the contacted organizations showed solid comprehension of the incident management aspects like: categorizations, escalation, tracking and input/output activities.

The only common concern in this category from most of the participants' feedback is the lack of self-service portals for the end-users, where users may report track the resolutions of their incidents or search for them via an efficient knowledge base. The lowest average values were for the incident management process interactions component with a value of (2.6). There is a notable absence for some of the surveyed organisations to the direct supportive process groups related to incident management like problem management, root cause and change management and to the indirect ones like release management, configuration etc. The second highest assessment component is the incident management metrics. It would seem that many surveyed organizations and most of the interviewees have shown proofs of process metrics and reporting activities in place. Incident reporting helps in identifying the required staffing and cost of the incident management process. The main cause of the low score in the Activities Needed in Place for the Success of Incident Management category is attributed to the lack of a well-defined service desk function within the organizations.

The scores were plotted in a radar chart as depicted in (Figure 2). The area in red represents the amount and dimensions of the sample organizations’ conformance to the 4 the components of the incident management assessment. Figure3 shows the maturity status for the summary of response w.r.t every assessment component. In other words, which assessment component achieved high number of 5s or 4s etc. The degree to which the IT service is aligned with the organization’s needs can be evaluated by the use of performance indicators calculated from measurements obtained from own IT processes, whether operated internally or externally. With a specific goal to create IT-related procedures for incident management process, organizations should explicitly define the proper authoritative capacities w.r.t incidents. In other words, organizations need to give specific focus on the relationship that governs their IT functions and their alignment with service levels or business needs. Periodic evaluation to the performance indicator that assesses such alignment would be very important for maintaining the required QoS levels.

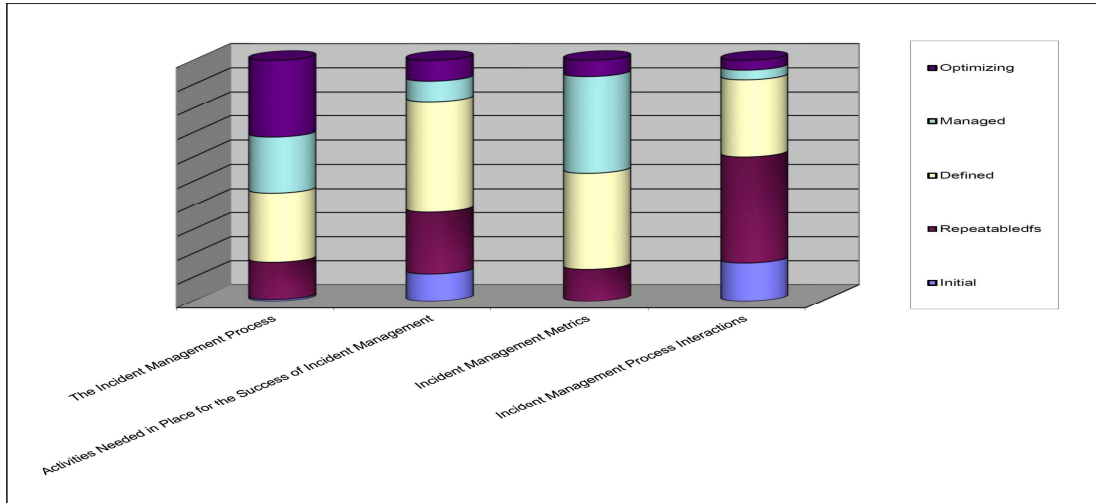


Figure 2: Radar Chart of the Assessment Score

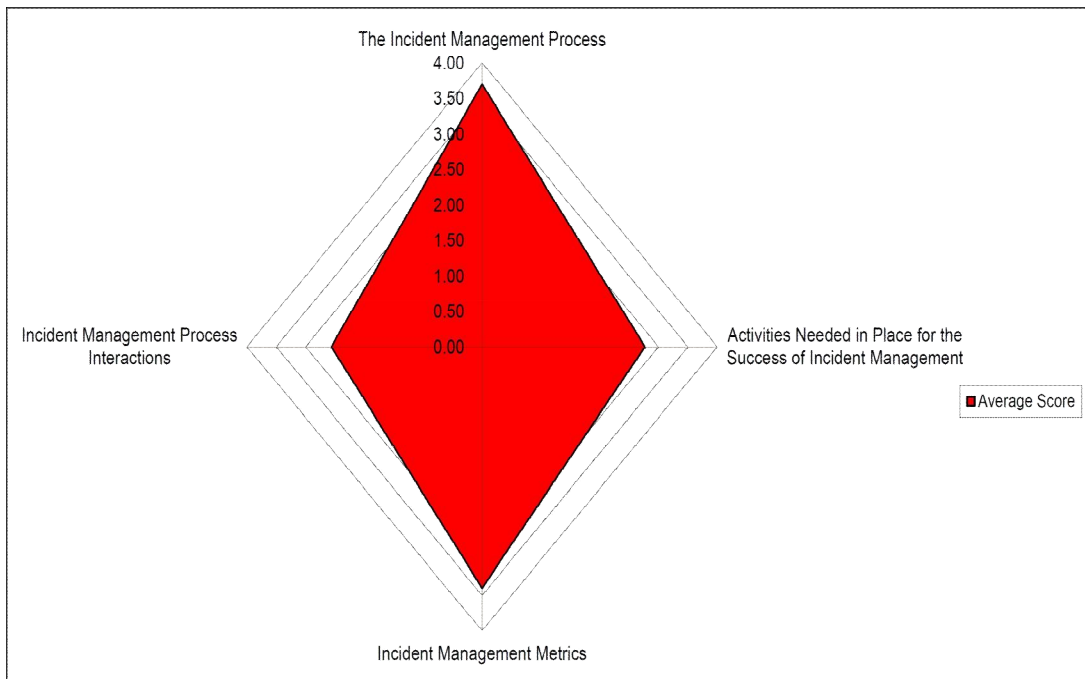


Figure 3: Response Summary

5. Conclusion

In summary, this research aimed to explore the compliance of incident management processes of a selected Saudi Organization's IT departments, to the best practices of ITIL framework. Incident management process is of highest priority to organizations as it represents the main gateway between its IT services and its intended end-users. This research provides an overview of the incident management maturity status among a selected set of Saudi organizations. Results showed that in spite of the well-established incident management structure and the active usage of process metrics, the interaction of the process with other IT support groups is not addressed. Organizations usually overlook the importance of the direct supportive processes like problem and changed management, and the indirect ones like release management which impacts the overall maturity of their incident management process.

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