PAPER • OPEN ACCESS

Maturity Model for IT Managed Services

View the article online for updates and enhancements.

Maturity Model for IT Managed Services

Suneel Wattal[1*]

[1]Department of Information Technology Electronic & Communication Haryana, Govt. of Haryana, India

*suneelwattal@gmail.com

Abstract. There is a growing trend for Enterprises to engage Managed Service Providers in order to outsource their IT related activities. The delivery capability of an MSP needs to be assessed in a standardized manner, which can be achieved by way of conceiving a Maturity model for the purpose. A study was conducted to develop a Maturity model for Managed Service providers. This model was implemented on a specific environment and the results were documented. The model had to undergo a few iterations and was refined during the implementation.

Keywords: Managed Service Provider, Managed Service, Maturity Model, IT Service Delivery

1. Introduction

Managed IT Services comprise of a set of Information Technology activities performed by the service provider for its clients. A Managed service provider (MSP) takes care of the clients' IT requirements. This could be done remotely, on the customer's premises or a combination of both. A Managed service could include a diverse set of tasks ranging across Network monitoring, server administration, database and application support. In fact, it can touch any of the IT assets of an Enterprise.

The scope and range of services gets defined by the commercial agreement between the customer and the MSP. The basic intention of adopting a managed service is to transfer the responsibility of managing IT assets to the MSP for a financial consideration. This goes with the business paradigm of 'Outsource to the experts and focus on core functions'. Thus, IT service provider manages and takes on the responsibility for providing a series of services to the customers, either in a proactive manner or as and when the services are asked for. The managed service provider is liable for the functionality of IT services, and the customer pays for such services, on pre-agreed terms.

Given this scenario, it has become essential to quantify the delivery capability of an MSP. The capability and maturity need to be assessed on the basis of existing delivery parameters, which in turn triggers the requirement for a Maturity model for Managed service providers.

2. Scope and Levels of Service

The scope of managed services can extend from basic support to complex problem solving. Generally, a managed service provider takes on the responsibility for support and management of IT services/ equipment against a predefined monetary charge for availing such services. The scope or nature of the services may vary, but the essence lies in transferring the maintenance and management of IT activities from the customer to a service provider. The most common model of Managed services is Remote management of servers, desktops and mobile devices. This includes monitoring of server health and regular maintenance like patching, upgrades etc. Another key model is that of application support, wherein the server provider maintains all applications and supports resolution of any issues pertaining to the functionality of those applications.

The extent to which a managed service provider provides the services is defined by the levels of service, which outlines the granularity of the MSP's delivery. The services range from basic helpline

operations to higher levels of technical support, product functionality, bug resolution etc. Managed service provider is governed by Service Level Agreements, which define the robustness, effectiveness and accuracy of the services so provided. SLAs are the measure of success for the service delivery. Ideally, the pricing of the service is dependent on the stringency of the SLAs.

3.   Material& Methods

a. Maturity Levels
Maturity level, in IT context, is a milestone towards achievement of a mature process. A higher maturity level would denote an increased competence in handling of service delivery. Maturity levels are an appropriate metric to identify the service capabilities of an MSP. The maturity is defined by way of several parameters, each having a specific level of achievement. A metric attached to a level is an indicator of the robustness or capability for that parameter. The levels would vary from a non-existent level to one of perfection and are assigned a numerical grading accordingly.

b. Models
In order to develop the model, a few existing models for IT support were studied, along with the best practices being followed in the Industry. Some of the commonly existing models are CMMi and ITIL. While CMMi is suitable for software development, ITIL is largely appropriate for IT support. The current study focuses on development of a maturity model specific to managed services, which has attributes spanning across development, support, monitoring and maintenance of devices, network, applications et al. Another model that was considered is the Gartner model for MSPs, which describes maturity levels from 'Chaos' to 'Value'. Several aspects of ITIL framework and Gartner model were adopted to create a customized model specific to the services being provided in case of MSPs.

We started by identifying the success factors of the MSP. The service contracts, SLAs and customer expectations acted as the basis for identifying these success factors, for which we conducted a series of interviews with the system users and workshops with the delivery teams of a few service providers.

The success factors, so derived, were classified into two groups - Explicit and Implicit. Explicit factors are the ones which are quantifiable and where performance can be measured. Implicit factors are the ones which concern softer aspects and are subjective in nature. The success factors so compiled are:

- o Explicit success factors:
    - Business Understanding
    - Operational Processes
    - Continuous Improvement
- o Implicit success factors:
    - Ownership
    - Skills
    - Communication

The Model so devised, comprised of mapping the explicit factors to various ITIL processes and their corresponding metrics. Implicit factors were correlated with the attributes in the Gartner Model.

The Mapping of explicit factors to corresponding ITIL processes and metrics is depicted below:

Level Dimension	ITIL Process	Metric	1 - Reactive	2 - Proactive	3 - Service	4 - Value
Business Understanding	Business Relationship Management	Dependency index	Basic Knowledge of Customer processes	Awareness of business cycles and period-end processes	Complete Knowledge of customer processes and business alignments	IT and Business Linkage, Future scenario modelling
	Service Portfolio Management	No of Planned/ Unplanned new Services				
		No of Strategic Initiatives				
Continuous Improvement	Knowledge Management	No of KM documents created/ accessed	Very few improvement initiatives, Inaccurate documentation	Significant level of improvements, Trend analysis, Problem prediction, Fragmented documentation, regular planned activities	Analyse metrics, Suggest & implement automations, documentation in place, well-defined dependencies and interfaces	Retire and replace decisions, driven by business values, IT as strategic business partner.
	Improvement Process	Saved personhours per qtr				
		No of repeat incidents reduced				
Operational Processes	Event Management	Alerts	Processes managed but not standardized	Standardized processes, Problem Management, Measure SLAs	Service-level oriented processes; Guarantee SLAs (Service Metrics, Process Metrics), Availability metrics, Capacity Management, SOPs	Risk and cost optimization, Integrated IT Operations framework
		Monitoring				
	Incident Management	Case Quality Index				
		No of Escalations				
		MTTR				
		OTO				
		Backlog index				
	Problem Management	RCA				
	Capacity Management	Utilisation				
	Availability Management	Application Availability				
	Service Measurement	CSAT				
	Service Reporting					

For the Implicit factors, the dimensions are listed below:

Level Dimension	1 - Reactive	2 - Proactive	3 - Service	4 - Value
Ownership	Limited ownership, Execute tasks as directed	Proactive approach in resolving an incident/ issue, Regular follow-ups	Assume end-to-end ownership of a task/ incident	Exhibit personal interest and ensure proper closures
Communication	Limited communication	Regular reporting and updates	Regular incident updates, Collaboration and periodic reviews	Effective communication & knowledge sharing
Skill Levels	Basic skills necessary for delivery	Skilled & adept at resolving tech issues	Cross-skilled and self-reliant workforce.	Expertise and analytical capability in all domains

The next step is to define the maturity levels of each success factor. The success factors are numerically graded from1 to 4, 1 being lowest and 4 being highest.

c. Case Background

The case under study comprised of a Managed service provider and a customer organisation (names withheld for confidentiality). Here, the MSP is providing support in respect of L2, L3 and Project services for a set of pre-defined applications. The delivery structure is logically grouped into four functional domains:

- Business Applications (Biz Apps)
- Transactional Applications (Trx Apps)
- Financial Systems (Fin Sys)
- Reporting Applications (Reporting)

The delivery has been baselined in terms of both volumes and capacity. Besides regular support and maintenance, there is a steady inflow of project activities which keeps varying, and accordingly there is a provision of flexible resourcing to take care of such variations. The customer also has deployed few of their own resources (mostly L3 and Projects areas).

The model was implemented to assess the current maturity level of the services being provided. Implicit and explicit success factors were evaluated for each domain. Service parameters were scored on the basis of values for corresponding metrics. However, the soft aspects were evaluated on the basis of observations and interactions.

d. Evaluation

The implicit factors were evaluated on the basis of actual observations. Each success factor was further drilled down to a few parameters as under:

- o Ownership:
    - Sense of Urgency
    - End-to-End follow-ups
    - Involvement of Customer/ other teams

- o Communication:
    - Daily/ Weekly Reports
    - Monthly Reports & Reviews
    - Work log updates
- o Skill Levels:

- ▪ Time taken for problem analysis
- ▪ Cross-skilling
- ▪ Internal SME support
- ▪ Human error

All these parameters were assigned an Impact factor. Impact factor is conceived as a measure of contribution of any parameter to its success factor. The impact factors are classified as Low, Medium, High and critical. Each impact factor is assigned a numerical value as : Low – 1, Medium – 2, High – 3 and Critical – 4.

Next, the parameters were scored for each of the functional domains. Each individual parameter was allocated a rating of Low, Medium, High or Optimal, based on the usage and robustness of that parameter. These ratings are translated into numeric scores by a mapping pattern of : Low – 1, Medium – 2, High – 3, Optimal – 4. For each parameter of a domain, the average score is calculated as a weighted average over the respective impact factors. A comprehensive scoring table for implicit factors evolved as under:

Success Factor	Parameter	Impact Factor		Biz Apps Operational Score		Avg	Trx Apps Operational Score		Avg	Fin Sys Operational Score		Avg	Reporting Operational Score		Avg
Ownership	Sense of urgency	Critical	4	High	3		High	3		High	3		High	3	
	End to End follow ups with User	High	3	Medium	2	3.00	Medium	2	2.70	Medium	2	2.70	Medium	2	2.70
	Involvement of Netapp/ other teams	High	3	Optimal	4		High	3		High	3		High	3	
Communication	Daily/ Weekly Reports published at Director level.	Low	1	Medium	2		Medium	2		Medium	2		Medium	2	
	Monthly Reports & Reviews	High	3	Optimal	4	2.86	Optimal	4	2.86	Optimal	4	2.86	High	3	2.43
	Work Log updates - user communication	High	3	Medium	2		Medium	2		Medium	2		Medium	2	
Skill Levels	Time taken for Problem Analysis	High	3	High	3		High	3		Medium	2		High	3	
	Cross-skilling	Medium	2	High	3	3.00	Medium	2	3.36	High	3	3.27	High	3	3.00
	Internal SME support	High	3	High	3		Optimal	4		Optimal	4		High	3	
	Human Error	High	3	High	3		Optimal	4		Optimal	4		High	3	

Explicit factors were evaluated on the basis of scoring of service dimensions (mapped to ITIL processes). Specific metrics were identified for each of the service dimensions. The evaluation of service parameters included Incident Analysis, Trend Analysis and service assessment. Each of the metrics was scored on a scale of 1 to 4, for all the functional domains. The overall score for each explicit factor was computed as the average of its metric scores. The calculation for these scores is tabulated below:

Dimension	ITIL Processes		Metric	Biz Apps	Trx Apps	Fin Sys	Reporting
Business Understanding	Service Transition	Evaluation	Impact Analysis	2	2	2	2
		Knowledge Management	No of KM documents created/ accessed	3	2	2	2
			No of incidents fixed using KB	2	2	2	2
				2.3	**2.0**	**2.0**	**2.0**
Continuous Improvement	Continuous Service	Improvement process	Saved person hours per qtr	1	1	1	1

	Improvement		No of repeat incidents reduced	3	2	2	2
			Process Audits	4	4	4	4
		Service Reporting	Weekly/ Monthly Dashboards	4	4	4	4
				3.0	**2.8**	**2.8**	**2.8**
Operational Processes	**Service Design**	Capacity Management	Utilization	3	4	3	3
		Availability Management	Application Availability	4	4	4	4
	Service Transition	Transition Planning & Support		2	2	2	2
		Change Management	Change Case Quality	4	4	3	3
			No of Emergency Changes	4	4	3	3
		Service Asset & Config Mgmt		1	1	1	1
		Release & Deployment Mgmt	Defects in Production	3	3	3	3
			Average Release Effort	3	3	3	3
		Service Validation & Testing	Incidents caused by new releases	3	3	3	3
	Service Operation	Event Management	No of incidents created using Alerts	3	3	2	2
			No of Incidents created based on Monitoring	3	2	2	2
		Incident Management	Incident Case Quality Index	3	3	3	3
			No of Escalations	4	4	4	4
			MTTR	4	4	4	4
			OTO	4	4	4	4
			Backlog Index	4	4	4	4
		Request Fulfillment	No of RFS, Backlog	4	4	4	4
		Problem Management	RCA	3	3	3	3
	Continuous Service Improvement	Service Measurement	CSAT	4	4	4	4
				3.3	**3.3**	**3.1**	**3.1**

The overall maturity rating for all the factors (implicit and explicit) was calculated by considering the weighted average of each factor across all the functional domains. The weights for computing this average were taken as the number of support personnel for each functional domain. The current maturity rating matrix was derived as:

Dimension	Biz Apps	Txn Apps	Fin Sys	Reporting	Weighted Score

	100	60	15	7	
Ownership	3.0	2.7	2.7	2.7	**2.9**
Communication	2.9	2.9	2.9	2.4	**2.8**
Skill Levels	3.0	3.4	3.3	3.0	**3.1**
Business Understanding	2.3	2.0	2.0	2.0	**2.2**
Continuous Improvement	3.0	2.8	2.8	2.8	**2.9**
Operational Processes	3.3	3.3	3.1	3.1	**3.3**

4.   Conclusions

The Maturity model was developed on the basis of various attributes specific to managed service providers. The model was implemented in the case under study and the current maturity levels were computed. Maturity scores for target rating were finalized after discussions with the customer teams from functional domains. The mapping is depicted as:

The current maturity rating chart was shared with both the customer and the service provider. Thereafter, they mutually agreed on a desired 'To-be' rating. The Gap analysis comprised of highlighting the low-scoring parameters and identification of improvement areas. The redressal of gaps led to mitigation for each improvement line item, which emerged into an action plan for service improvement.

References

1.   Flores J, Rusu L, Johannesson P. A Maturity Model of IT Service Delivery A Maturity Model of IT Service Delivery. Int Conf Inf ResourManag (CONF-IRM 2011) Proc. 2011;1–10.
2.   Eckerstein J, Malmros J. IT maturity self-assessment. 2015;(June).
3.   April A, Hayes JH, Abran A, Dumke R. Software Maintenance Maturity Model (SMmm): The software maintenance process model. J SoftwMaintEvol. 2005;17(3):197–223.
4.   Becker J, Niehaves B, Pöppelbuß J, Simons A. Maturity models in IS research. 18th Eur Conf Inf Syst ECIS 2010. 2010;(August 2014).