

ITSM Solution Selection Criteria

Ahmed A. Al-Hejji, Abdullatif A. Al-Zahrani, Waleed A. Saglab, Omar A. Al-Shatri, Safran A. Al-Safran
EXPEC Computer Operations Department,
EXPEC Computer Center Dhahran, Saudi Arabia

Abstract:- Adopting an Information Technology Service Management (ITSM) solution for a large enterprise is not a straight forward process; it is lengthy and challenging. The support organization should look for an ITSM solution that delivers a wide range of capabilities while being simple to use, own, and operate. The process involves an evaluation of multiple solutions and participation of key customers to identify the proper solution that helps an organization achieve its business needs. This paper will focus on identifying criteria that helps in selecting a suitable ITSM solution for the business.

There are different ITSM frameworks, and the Information Technology Infrastructure Library (ITIL) is the most widely used. ITIL is defined as a set of processes and standards that helps organizations within an enterprise to practice effective IT Service Management (ITSM).

I. INTRODUCTION

ITSM is defined as the activities that are performed by an organization to design, build, deliver, operate and control Information Technology services offered to customers. (Wikipedia, the free encyclopedia)^[1].

ITSM emphasizes on approaches led by processes. These processes consist of a set of best practices called framework^[2]. There are many ITSM frameworks but the most well-known and widely used is ITIL (Information Technology Infrastructure Library). It is a set of processes and standards to help enterprise practices for effective IT Service Management (ITSM)^[3].

Business goals and technology trends are the main drivers of having ITSM solution and they are considered as the core measurement of any successful ITSM implementation. Examples of business goals include providing better services, with higher quality, at a lower cost. These may be translated to a robust Asset Management System with automated discovery, ticketing, knowledge management and service portal.

II. BENEFITS OF USING ITSM^[4]

Following ITIL processes, ITSM solutions will support organizations achieve efficiency and productivity when performing operations. By having a well-defined strategy in service management, organizations can align their IT environment with their business goals and streamline the delivery of services based on budgets, resources, and get desired results. Such alignment reduces costs, mitigates risks, and ultimately improves customer satisfactions. The points listed below show the importance of ITSM deployment:

- **Standardization and synthesis:** ITSM solution standardizes IT procedures in an organization. Streamlining IT services becomes easier and facilitates employees' tasks.
- **Better performance:** Employees perform better when they are given the right set of tools. Using ITSM tools supports employees in finding the accurate information needed faster, thus, improving work accuracy.
- **Better customer support:** Using ITSM standard processes and self-service applications help foster a positive customer experience.
- **Reducing operational cost:** Utilizing ITSM tools saves time and money in the long run. With these tools, employees perform the work faster and can meet tight deadlines.
- **Visualizing workflows:** Business workflows can be visualized easily because ITSM provides advanced IT solutions that add value to business. Instead of investing more time and money in fixing technological glitches, ITSM can enhance the business functions by adding to overall growth.
- **Managing assets:** Utilizing ITSM tools improve an organization's asset management process. Both hardware and software assets are being monitored 24/7. This includes tracking the usage, and any changes to IT assets being reported faster. This helps in improving the durability and performance of assets.
- **Reducing dispute in the workplace:** Companies suffer from occasional clashes between departments. When something doesn't work according to plan, people tend to blame their faults on others. Using ITSM tools, one can objectively find the root cause of such disputes, and take action to minimize such scenarios from occurring.
- **Better employee performance evaluation:** Assessing an employee's performance and effectiveness is made easier by using ITSM tools. Performance reports can be generated from the ITSM tool to review number of tasks, requests and changes implemented or resolved by each employee and the customer ratings given for each task.

III. CORE ITSM SOLUTION CAPABILITIES

Any implementation of ITSM solutions should have most, if not all, of the below core capabilities:

- **Asset management:** Managing assets, tracking the financial and operational information, and producing various asset reports throughout the asset lifecycle. Asset management includes additionally asset discovery and inventory systems that ensure more reliability of assets information.
- **Change management:** Enable change management process to manage and control changes throughout their lifecycle.

- **Configuration management:** Maintain operational information about Configuration Items (CIs) required to deliver an IT Service, including their relationships.
- **Incident management:** Manage the lifecycle of all incidents according to the defined service level management metrics to immediately return the IT Service to Users.
- **Knowledge Management:** Enable people to capture, store, share, and retire knowledge articles so that organization efficiency is improved. This will ultimately reduce the need to rediscover knowledge.
- **Problem management:** Enable IT staff to manage problems throughout their lifecycle and perform root cause analysis. This will prevent repeated incidents and minimize the impact of unavoidable incidents.
- **Service reporting:** Produce and deliver reports of achievement and trends against service levels, discrepancies, completeness of assets information, and process compliance.
- **Service level management:** Allow IT staff to systemize Service Level Agreements (SLAs) with customers. By systemizing SLAs, no human judgment is needed to quantify the level of delivered service.
- **Service request management:** Allow IT customers to submit requests and allow IT staff to resolve them throughout the request lifecycle.

IV. ITSM EVALUATION STARTING POINT

First step is to identify the organization requirements for the ITSM solution and classify them into two main categories: must-have and good-to-have. This will help judge fairly the applicability of an ITSM solution.

The next step is to obtain trusted and independent sources for an objective perspective on the ITSM market. Sources include research and consulting firms which produce frequent reports based on technology trends, market demands, and other considerations. Some of these firms are Gartner, G2, Forrester, Peer Spot and others. Majority of them provide comparison between ITSM products and features, customers ratings and reviews, capabilities comparisons and more. As an example, Gartner Magic Quadrant for IT Service Management Platforms is one of the better places to start with in searching for a new ITSM solution. Because it is a challenging process to evaluate all ITSM vendors, it is recommended to start by reviewing the latest reports provided by these companies to look for the top 10 ITSM solutions in the market.

After that, ITSM solutions websites can be visited to assess the ease of use of the products and experience with the demo environment, if available. This could help in performing initial evaluation and would give the first impression on how easy and intuitive the solution is to use.

In the following sections, more details will be discussed about other criteria for further evaluation and ranking ITSM solutions.

V. ITSM SOLUTION EVALUATION CRITERIA

Even though reports from research and consulting firms have a lot of evaluation criteria that helps to select the initial list of candidates, organizations need to prioritize the measures to select the best suitable option that meets their requirements. Below are some important criteria to be discussed briefly.

A. Cost and Budget

Each ITSM solution has its own distinguished features and capabilities. Each solution has its own cost (License, Deployment & Maintenance) and it is one of the most important criteria when selecting an ITSM solution.

Organizations should have a way to calculate return on investments (ROI). This is directly related to the expected outcome upon implementing the ITSM solution. The ROI is measured over a period of time, and if the ITSM expected deliverables are achieved in the defined timeframe, this would indicate successful ITSM implementation. As an example, the ROI could be realized in potential cost savings by either reducing or optimizing manpower with the introduction of ITSM automation.

Organizations should perform cost-analysis to identify the business added value and calculate the Return of Investment (ROI) of deploying ITSM solution.

To measure ITSM cost, organizations should consider the total cost of ownership (TCO) which may span infrastructure resources, staff training and protentional local and vendor support costs. The TCO could be measured and seen from the following aspects:

- **Initial cost:** The initial cost for deploying a new ITSM solution includes software licenses, hardware resources, implementation professional services and training. This may include other indirect costs such as licenses for new infrastructure platforms if ITSM solution is deployed on-premises, more details in the next criteria.
- **Operational cost:** This cost includes maintaining and supporting the solution in terms of day-to-day support, patches, upgrades, license renewal and vendor technical support. Some ITSM solutions might have a very attractive initial cost that could attract a number of customers, however, they might come with expensive maintenance costs to support the system, or their solution training and consultation are expensive.

B. Hosting option (Cloud or On-premises)^[6]

Nowadays there are two main deployment options for software; the traditional way where the software is installed on organization premises (commonly known as On-Prem). In this option, the organization will be responsible for preparing all hardware and software requirements. On the other hand, the cloud option is relatively new but has matured quickly over the last few years. In this option the cloud provider is responsible for all hardware and software requirements including the hot fixes and upgrades. The cloud option is commonly referred to as Software as a Service (SaaS).

Each ITSM solutions (SaaS or On-Prem) has its own advantages and disadvantages. To decide which option is more suitable for an organization, different factors need to be evaluated such as:

- **Cost:** The On-Prem hosting option might appear to offer better value in the long term especially when comparing initial licensing costs. However, this initial comparison could be misleading as multiple expenses need to be included to run the solution on-prem, such as the cost of hardware (servers, storage and facilities, i.e. power, cooling and floor or rack space) in addition to operational costs (software patches, backup and disaster recovery). Additionally, the cost of solution upgrade for on-prem solution needs to be considered while the cloud solution is upgraded and maintained by the software vendor.
- **Security:** A number of organizations believe that it is more secure to run the solution locally in a datacenter (On-Prem) than it is to run it on a cloud. That may have been true in the past. However, since cloud computing is no longer a new technology, more secure measures and standards have been developed by the largest cloud providers to ensure their cloud solutions are very secure by having robust security tools, teams and tight procedures.
- **Scalability:** this is an area where the cloud option surpasses the On-Prem option as it can be expanded as per business needs without the need to wait for lengthy processes to acquire new hardware being added to the data center.
- **Customization:** customization is another key factor to consider. If an organization needs to implement extensive customizations on the solution, the On-Prem option will give more flexibility and faster implementation for business needs. Highly skilled development team must be employed for that purpose.

Based on the above factors, it is obvious that no one option can be considered as the best for all organizations. Each organization should choose the right option that helps it achieve its stated goals and meet business needs.

C. Licensing model

One of the difficult tasks during the evaluation of ITSM solution is trying to understand the licensing model which could be confusing. There are different licensing models such as perpetual, subscription, site licensing, cloud-based, and others. Each model has its own pros and cons and customers must evaluate each carefully to decide on the best option. The most important task when preparing for ITSM licensing is to understand the requirements clearly and then convey it to the ITSM company representative to translate it to the licensing model. Of course, there will be more details and aspects to be clarified such as the estimated number of concurrent users, number of integration points, number of assets growth rate, and others. The rule of thumb is to start with the minimum sufficient number of licenses. Over time, the usage of licenses should be tracked frequently and adjusted based on business needs.

D. Ease of deployment, maintenance and upgrade

The effort and time required for new ITSM solution deployment and support are very important criteria to consider for selecting the proper ITSM solution.

The deployment involves multiple steps such as installation, configuration, customization, integrations with other systems and sometimes migration of data if the organization has an old system that needs to be replaced. The deployment time ranges from multiple weeks to multiple months based on solution complexity and customer requirements. This time can be estimated by the solution provider considering the readiness of the customer.

In addition, ITSM solutions need to be upgraded periodically either to fix issues, get benefits of the new features, or maintain support due to software end of life. The upgrade should not be considered as a concern when the solution is deployed on cloud (SaaS) since it will be performed by the vendor and should be seamless for the customers. However, the upgrade will be considered as an important criterion for On-Prem deployments. Most organizations prefer solutions that can be upgraded easily with a minimal or no additional cost and with minimal or no outage.

E. Ease of customizations

IT departments generally prefer to deploy software the way they came out of the box, since any customization will likely introduce integration concerns, complexity, and future technical support issues. That preference cannot be guaranteed with ITSM solutions as most, if not all, solutions must be customized to meet specific business, technology, or service requirements. In fact, most of ITSM solutions are designed to allow customizations. For that reason, one of the criteria that needs to be considered is how easy to customize the solution to meet the organization needs. Some vendors claim that their solutions can be customized with low or no code which allows non-IT employees to do the required customizations without the expert support. On the other hand, other solutions either require considerable efforts and cost to be customized or they have very limited customization flexibility.

F. Integration capabilities

Integration is another key factory for a successful ITSM solution. Organizations are increasingly relying on IT initiatives such as new digital initiatives, deploying new systems or mobile applications and Internet of Things (IoT) devices.

Many organizations struggle because they have difficulty in integrating the ITSM solution to other existing systems. This integration limitation will eventually result in multiple systems to work as silos causing multiple data sources which may affect data integrity. It is important to consider integration capabilities when selecting an ITSM solution.

Integration capabilities help organizations in connecting and unifying multiple systems components into a single cohesive system to ensure that all individual pieces or sub-systems of an organization work as a whole. This helps the organizations to successfully automate business and operational processes that rely on multiple systems. Consequently, that helps in centralizing data sources into a single data repository.

G. Advanced ITSM capabilities

With the continuous advancement of IT and increasing user expectations, it is highly recommended to check the availability of the following capabilities in the ITSM solution:

➤ Dashboard and reporting

Since the ITSM solution hosts hundreds of data types that may contain millions of records that are increasing on a daily basis, reporting and dash boarding capabilities are becoming a necessity for an ITSM solution. Reports can be used to show processes performance, volume of items, trends, discrepancies, history or other usage. Moreover, modern ITSM solutions should have features such as real-time dashboard with dynamic filters and customizable look and feel. Additionally, reporting functionalities should have report scheduling, security and access controls, ability to export to different types of file formats, all modern-style of charts and gauges, advanced formula and SQL editors, and various kinds of built-in functions for conversions, aggregation, and other general-purpose utilities. If analysts need to create report not provided as part of the tool, then the software is weak in the reporting area.

➤ Automation capabilities

Organizations are always working on enhancing their processes to save time and minimize human interactions. Since ITSM solutions play major role in the daily work of organizations, it is expected that such solutions are capable of automating manual and repeated tasks. ITSM automation can be implemented in many areas such as service desk, ITSM housekeeping jobs, ITSM administration work, software deployment, and implementation of pre-approved changes that have well-defined steps. More automation achieved by ITSM solution indicates higher maturity and reliable services. Though it is an important criterion, ITSM automation capability requires readiness of existing systems (such as API integration) and business processes.

➤ Self-service portal

A self-service portal is an end customer interface that offers information and resources to help customers submit service requests or find answers for questions to resolve their issues. This is a good feature to consider when selecting ITSM solution.

The self-service portal helps organizations structure their knowledgebase and business services in an optimized way that meets their needs. That enables IT organizations to provide more services effectively and in a timely manner without human intervention. The self-service enables users to serve themselves at any time and

reduce support requests to the helpdesk/ service desk. By enabling an effective self-service portal, organizations can reduce the operational costs and deliver optimum services to customers. One of the obvious services that should be transferred to self-service is the reset of user password. In the traditional way, the user has to call helpdesk and ask them to reset the password; the helpdesk asks some security questions to ensure the identity of the caller. This call might take minutes. This process can be done through a self-service without the need of calling helpdesk support agents.

➤ Artificial intelligence and service bot capabilities

It is important for the organizations to consider Artificial Intelligence technology when selecting ITSM solution. AI technology enables organizations to leverage their data to take business and operational decisions in a more efficient and timely manner.

There are plenty of benefits that motivates organizations to leverage AI capabilities into their operations. One of the most common benefit is to optimize the organizations' business processes. For example, AI can be used to send out automatic reminders to departments, team members, and customers. It can also be used to monitor network traffic, as well as handling a wide variety of routine and repetitive tasks that would, otherwise, consume IT support time. This will ultimately free them to focus on more critical aspects of the business.

Another added benefit of AI is to enable organizations to provide automatic support and responses to end-users during or after business working hours. Also, it can help the organizations to provide responses in multiple languages.

AI can help organizations in terms of providing personalized customer experience. This includes: recommendations, answering questions, helping users finding products, and more. AI can be used by organizations to analyze large amounts of data which can lead to strategic insights and business intelligence that would not have been discovered otherwise.

There are many more benefits that AI technologies can empower organizations with such as correlation and predictive analysis which require performing complex calculations that cannot be done by humans easily.

➤ ITSM mobility

Accessing ITSM by different types of users is becoming a necessity at any time and at any location especially with the advancement of mobile phones and portable devices. Modern ITSM companies offer mobile applications for that reason. With this capability, a business manager can approve an urgent request while he is out of his office. Similarly, a technician can update an incident request at the user site through a mobile device. Additionally, having notifications on ITSM mobile applications can shorten the response time for urgent incidents.

➤ *DevOps readiness*

DevOps concept has grown rapidly over the past ten years. It is a set of practices and tools that helps in delivering applications faster than the traditional method which involves many controls and extremely well-defined development and deployments steps. To have a successful DevOps environment and at the same time utilize the ITSM benefits, ITSM solutions provide automatic CMDB updates, creation of change requests, approvals, and application deployments. Such features enable agile deployments and maintain compliance to existing controls which are core requirements of DevOps.

➤ *Social media*

There are at least two dimensions that are common between ITSM solutions and social media: the ability to interact with social media sites and employing social media concepts in user-facing screens. The ability to access and interact with social media helps some companies reach and interact with their customers. This may mandate backend integration and, hence, the ITSM solution should be capable of that.

Additionally, since most users now are very familiar with the social media sites and mobile applications, some ITSM solutions already adopted this style. Such style allows users to share ITSM content, follow specific subject or person, interact with comments in a thread, browse knowledge articles, likes and dislikes, mentions, and others. In short, even though social media integration and styles may not be a critical factor in the ITSM solutions nowadays, technologies are changing fast and such capabilities should be considered.

➤ *Google maps*

The capability of ITSM solution to integrate with Google Maps is very important for some organizations that have multiple sites or serving customers located in different geographic regions. Such capability helps in providing various useful reports such as incident locations, change impact, asset distributions/location, and more.

H. Customers rating

Most people rely on recommendations and reviews from previous buyers to understand the quality of a product or service they wish to buy. This holds true even for organizations looking to purchase ITSM solutions. Below are some hints that explain how to get benefits of previous customer ratings of an ITSM solution:

- Look at specific features from different customers.
- Examine authenticity of the review/customer rating (referenced website).
- Check rating timeline with respect to product releases.
- Consider rating in relevance to company size, industry and spread.

I. ITIL compliance

ITIL stands for Information Technology Infrastructure Library and refers to a specific framework for ITSM that was developed in the 1980s. It is comprised of a set of specific methods, practices and processes for managing an organization's IT operations and services.^[7] It provides

guidance for improving the quality and effectiveness of IT services. Companies that use ITIL processes and best practices typically see an improvement in customer satisfaction and productivity.^[3] ITIL is not a standard but a set of recommendations.^[8]

Adhering to ITIL principles helps to ensure that organizations can get to the root cause of problems in their environment as quickly as possible. This eventually helps organizations to have the right visibility into the systems and people to prevent future problems.^[9]

ITIL potentially will reduce IT operations cost, improve productivity and employee satisfaction, manage risk, and reduces failures and disruption throughout the organization.^[10]

The goal of ITIL for organizations is to create predictable IT environments and to deliver the best customer service possible to customers and clients by streamlining processes and identifying opportunities to improve efficiency.^[10]

By following industry best practices and being up-to-date with latest ITIL version, organizations can enhance their business processes and elevate the service experience. So, it is one of the important factors to make sure the selected ITSM solution is ITIL compliant.

By using appropriate supporting tools, organizations can easily implement and facilitate the framework ITIL provides, which can have huge and long-lasting positive effects on organizations' business. Following ITIL practices with good ITSM software can ensure that customers receive good-quality services and IT teams and operations are highly integrated into business processes.^[11]

J. Vendor support services

Another main factor that plays a major role in selecting the proper solution is the support vendor. The vendor should be highly qualified to deliver great support services during the installation, deployment, configuration, hands-on training and after-sale support.

Support can come with different forms not only through traditional methods of phone calls and emails, but it should be offered in different ways such as self-help, AI chatbots, blog posts, online product documentation and community forum/support website.

Existence of regional/local support offices for the support vendor in the customer site is an added-value as it will help to make communication and support easier and faster due to similar working hours and time zones.

The use of social media could also ease the communication between customers and the support vendor. Some vendors allow customers to get support through social media.

Another aspect of support is the possibility to request product enhancements and new features. The ability to communicate with product development team is important

to get answers for questions related to integrations with other products and running on specific environments with security measures in place.

VI. CONCLUSION

There is no one-size-fits-all ITSM solution. The best suitable ITSM solution for certain clients might not be the best for other organizations as it depends on multiple factors such as business needs, budget constraints, project timeline and other criteria. Each organization needs to go through such exercise of selecting ITSM solution to select the proper ITSM solution that meets the business needs and help to respond to the increasing demand while maintaining a robust operation and meeting customer satisfaction. The stated criteria in this paper will help the reader to understand the differences between the ITSM solutions and the right approach to deploy the best-fit for the organization.

REFERENCES

- [1.] IT service management - Wikipedia [Online] Available: https://en.wikipedia.org/wiki/IT_service_management [Accessed: 2 Jan. 2023]
- [2.] What is an ITSM framework [online] Available: <https://www.freshworks.com/freshservice/itsm/itsm-framework/> [Accessed: 2 Jan. 2023]
- [3.] ITIL and ITSM best practices for process improvement[online]Available:<https://www.techtarget.com/searchcio/essentialguide/ITIL-and-ITSM-best-practices-for-process-improvement> [Accessed: 2 Jan. 2023]
- [4.] Benefits of ITSM | Advantages and Disadvantages of ITSM [online] Available:<https://www.itarian.com/itsm/benefits-of-itsm.php>[Accessed: 26Feb. 2023]
- [5.] Gartner Magic Quadrant for IT Service Management Platforms Published 31 October 2022
- [6.] The Key Differences Between On-Premises and Cloud Security – Channel Futures [online] Available: <https://www.channelfutures.com/best-practices/the-key-differences-between-on-premises-and-cloud-security> [Accessed: 2 Jan. 2023]
- [7.] The 5 Pillars of IT Service Management [online] Available: <https://www.teamdynamix.com/guide-to-it-service-management-best-practices/> [Accessed: 2 Jan. 2023]
- [8.] Basic Ideas behind ITIL | IT Process Wiki [online] Available: https://wiki.en.it-processmaps.com/index.php/Basic_Ideas_behind_IT_IL [Accessed: 2 Jan. 2023]
- [9.] ITIL - IT Infrastructure Library [online] Available: <https://www.ibm.com/topics/it-infrastructure-library> [Accessed: 2 Jan. 2023]
- [10.] What is ITIL? Your guide to the IT..... [online] Available: <https://www.cio.com/article/272361/infrastructure-it-infrastructure-library-til-definition-and-solutions.html> [Accessed: 2 Jan. 2023]
- [11.] What Is ITIL? Guide to ITIL Process Standards [online] Available: <https://www.dnsstuff.com/what-is-til> [Accessed: 2 Jan. 2023]
- [12.] ITSM integrations – Manage Engine Service Desk Plus [online] Available:<https://www.manageengine.com/products/service-desk/integrations/> [Accessed: 15 Feb. 2023]
- [13.] What is a Self-Service Portal [online] Available: <https://www.salesforce.com/products/service-cloud/self-service-portal/> [Accessed: 15 Feb. 2023]
- [14.] System Integration: Purpose, Types, Methods & Benefits [online] Available:<https://www.kaseya.com/blog/2022/04/07/system-integration/> [Accessed: 15 Feb. 2023]
- [15.] The Future of IT and Artificial Intelligence – My Computer Career [online] Available: <https://www.mycomputercareer.edu/news/the-future-of-i-t-and-artificial-intelligence/> [Accessed: 15 Feb. 2023]