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Implementing IT Service Management and Evaluating its Benefits

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Abstract: The transparency and accountability of Information Technology (IT) organization can be increased by utilizing the features of IT Service Management (ITSM) tool. ITSM tool makes it possible for enterprise to digitize the workflow and ensure quality service to achieve the best possible business results. The issues present in the company that affect the day-to-day work life of employees has to be kept track of and assigned to the one in-charge. This can be achieved using ITSM tool which automates the process of assigning tasks and avoid the human intervention which increases the utility of available human resources. The papers reviewed here provide steps to implement ITSM in an enterprise in any sector, fine tuning the existing model and evaluate the management system. Further it also assesses the effect of implementing ITSM in various sectors like healthcare, education institutions and others. All these points are to be considered while configuring ITSM for an enterprise.

Key words: Information Technology Service Management (ITSM), Information Technology (IT), Information Technology Infrastructure Library (ITIL), Evaluation Framework.

I. INTRODUCTION

Information Technology (IT) function is managed as service function using IT Service Management (ITSM), it helps to integrate the operations processed in various departments of an enterprise which increases the efficiency of the company. ITSM is a tool which offers smooth IT operations/services, manages consumers and service level agreement to achieve the aspired business results. The end-to-end delivery of IT services consisting of activities and processes of designing, developing/creating, delivering to the customers along with managing of the whole system is taken care by the IT teams and are collectively held up and integrated using IT tool. The main objective of having ITSM tool is to maximize the business outputs by providing faster resolutions to problems, enabling timely communication between requester and fulfiller, provide required assistance in technical and non-technical challenges through interactive chat-bots, automating task assignment, managing the workflows, maintaining the integrity of data and manage the database. The platform on which ITSM is developed shoul provide Application Platform as a Service (aPaaS), a cloud-based computing model that provides the infrastructure needed to develop, run and manage applications. The platform should be built a single data model which integrates easily with other enterprise systems and supports a wide variety of plug-play applications. Applications supporting IT organisations can be built using this platform.

II. ITSM SUMMARY

In [1] the tuning of ITSM processes is achieved by developing a five-step method which concentrates on improvising the functioning of the company by managing the roles of employees based on their skill-set and knowledge. Dynamic network analysis is the core highlight of the five step method and this model contains persons, knowledge and roles as its data storage blocks or classes which are related to each other in four different types of relationship. Also few other methods for process tuning like business process modeling is briefed upon but the five step process mainly relies on dynamic network analysis. Diving into five step method, the five process steps detailed to tune the ITSM are, defining process, defining the roles, building a dynamic network analysis model, analyzing the dynamic network analysis model, suggesting the improvement to increase the efficiency of process. Defining the process can be represented as incident management and the different activities of incident management are incident identification, incident logging, incident categorization, incident prioritization, incident diagnosis, incident escalation. The different roles can be defined and categorized as incident management process owner, incident manager, first line support, second line support manager, second line support, customers, users, third line support. Building dynamic network includes defining the four relationships between the classes of dynamic network analysis and those are, the person to contact for assistance, knowledge the each individual posses, specific role of each person, requirement of knowledge for each role. Analyzing the dynamic network analysis model is the step in which the performance analysis of the model is carried out by design matrix for the classes of the model. The four matrix designed are person-person matrix, person-role matrix, person-

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knowledge matrix, role-knowledge matrix. At last based on the results of dynamic network analysis the inferences and suggestions can be drawn to improvise the process design.

In [2] all the different solutions, data models and various approaches to optimize the IT operations are mentioned and the outcomes, efficiency of the different processes are compared. Various applications and approaches to information technology service management and information technology infrastructure library domains are emphasised upon. The measurable benefits, returns of implementing ITSM and frameworks and the different performance measures which can be used to determine the benefits of ITSM are emphasised. The performance measure is defined by addressing the effectiveness of any business action and the efficiency at which the action was carried out. The theoretical studies carried out by different IT sectors and the empirical results for the performance measure of the ITSM is compared. Major comparison of the performance measure or performance metric frameworks of ITSM v2 and ITSM v3 along with the Information Technology Infrastructure Library (ITIL) v2 and v3 is carried out and the comparative study is based on the number of top rated IT corporations applying and implementing these frameworks and performance measure tools in their business models. Also the utilization and application comparison of the ITSM v2 and ITSM v3, ITIL v2 and ITIL v3 in the various fields like incident, change, problem, service level, service catalog, request fulfilment, IT service continuity, release and deployment, finance, capacity, service asset and configuration, availability, service desk, demand, service portfolio is carried out. The challenges in implementing various ITSM models along with the benefits of the same is also provided.

In [3] the utilization of ITSM models not only in a particular branch of an enterprise rather implementing ITSM across all the campuses of an organization to integrate the data, operations, functionalities of various branches or campuses of an individual organization is outlined. An optimized hybrid case-based and rule-based framework of ITSM tool is developed by combining the frameworks, considering the operations and functionalities of various domains of IT like service management, service outsourcing model, business planning, business continuity, business longevity, business criticality, incident prioritization. An ideology to correlate the service and events of IT firms and service outsourcing is provided which leads to the improvement in the efficiency of ITSM model. Rule-based framework is built on the basis of storing a set of rules in a database and hence it is also called as knowledge-based reasoning. The actions are executed when the criteria are met and solution to complicated problems can be provided by increasing the number of rules. The limitation of rule-based framework is that it can not be effectively used in wide-ranged enterprise network. The other approach to build a framework is case-based and it relies on recollecting the past experience of any challenge solved and adapting to the current problem based on the experience of the previous. If a fault is reported under the cased-based approach then the four steps to be followed are, finding out the most similar and related cases, reusing the solutions of previous cases if the symptoms of the current and previous case are matched, updating and revising the current solution presented if necessary, retaining the new case along with the solution proposed to solve the future cases. Another type of framework is model-based which is an object oriented model where each component of an enterprise like router, switch, hub, port (the physical entities) and also domain, WAN, LAN, service (the logical entities) as represented as a model. Attributes, relations to other model, behaviors are the three categories of information present in model description.

The fundamentals and theory of service level management, ITIL is presented and other related concepts like business service management, control objectives for information and related technology, IT governance are detailed and the hairline differentiation between the former and the later is emphasised in [4]. The understanding of the concepts of these models and frameworks is given utmost importance in the study because, it improves the knowledge and decision taking capacity to determine the type of model or framework to be implementing so that the implemented framework will be suitable to the requirement of an enterprise or organization. The survey and comparison of service level management, business service management, IT governance, business service management, control objectives for information and related technology, was carried out among the organizations and enterprises established and located in US alone. Primary results were that less than half of the companies implemented ITSM in their business models and the further inferences drawn was that the companies which implemented ITSM in their business actions were also not clear with the differences between various framework and had a conceptual confusion of the ranks and level of application of these framework.

A case study of the challenges, benefits, breakthroughs, advantages and difficulties faced and experienced to implement ITSM by an organization is illustrated in [5]. The importance of commitment of individuals in different roles especially the senior management support profile and also contribution of other employees and support staff is highlighted and also the need for maintaining a healthy relationship with vendors is explained. All areas of IT like incident management, service desk, problem management, configuration management, change management, release management, service level management, capacity management, IT service continuity management, availability management, security management, operations management, vendor management, application management, customer relation management are set with a timeline within which each of this department were progressively upgraded to attain maximum benefits from ITSM and the results are also published. The survey of customer satisfaction in the domains of availability of support, responsiveness of the support, system performance, support expertise, quality of system, impact on your work, functionality of system and cost of service was carried out. Managing the staff and allocating the rules to them and

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maintaining a good vendor relationship was a major challenge in the organization and later by defining the aspects of ITSM the issues were resolved.

In [6] a survey is carried out to quantify the number of hospitals implementing ITSM or ITIL to have a good service maintenance and management. The importance of applying the models of ITSM in medical field is explained apart from the implementation of ITSM, ITIL and both of it's versions one and two in the IT sector. The opinion of each hospital regarding the utilization of features of ITSM was gathered by conducting standardized interviews with the head of information technology of respective organizations. Due to strained or faded financial situation the health care centers, hospitals and other organizations providing medical assistance are witnessing drop in their efficiency and a lot of pressure to improve the same and also bring financial balance by reducing cost and paralell maintaining or even increasing the quality and variety of their medical service, which can be achieved by inculcating ITSM, ITIL models and frameworks in their business processes. Service strategy, service design, service transition, service operation, continual service improvement are the five core domains of ITIL v3 which are structured and aligned according to the life-cycle of services and the ITIL v3 is an ideal model for the medical related firm is the inference. The main areas concentrated on are the concepts of how IT is being organized in different hospitals in different locations, how knowledgeable are the IT managers of different hospitals regarding application of ITSM frameworks, the reasons hindering the application of ITIL in hospitals along with the advancement in the field of ITSM. The results out interviews of IT managers of different hospitals evidently proved that the IT managers of hospitals in slovokia were not familiar with these concepts and apart from them majority nearing two-third of the hospitals had already implemented few of the features and management models of ITSM and one-third had all the features of ITSM actively contributing to their business actions.

The benefits, advantages and the assistance offered by implementing ITSM processes and utilizing all its feature has to be quantified and measured instead of predicting and assuming. The framework is designed in [7] to evaluate the efforts of ITSM in providing improvement to the organizations which implemented it along with the ITIL tool. The approach to decide the type of evaluation framework to be used and whether the selection of these should be based on the specific needs of the IT managers, or would it be ideal for an organization to create its own, is presented. The process steps with the outputs of the same are defined to build an evaluation framework for ITSM and it includes awareness of the problem with a proper proposal being its output, existing theory, suggestion for which tentative design concepts form an output, development which leads to articrafts, testing/evaluation/validation with an output of contextual inquiry followed by analysis and conclusion producing results. Also in the design proposed to develop an evaluation framework the corporate level evaluation and the process level evaluation are integrated in which the user perspective, IT employee perspective, management perspective and technology perspective are taken into considerations. The framework mainly consists of the above four perspective of evaluation, abstraction at corporate and process levels, utilizing the IS adapted SERVQUAL, a range of outlined and drafted metrics for each ITIL process which contains effectiveness, efficiency and capability and a wide range of survey question to provide a valuable feedback for assisting evaluation framework.

A comparison of benefits and challenges that the companies face at various levels of implementation of ITSM and ITIL is carried out in [8]. The solutions to questions like the effect that the total number of implemented models or the processes have on the maturity of ITIL implementation, the approach in which the challenge are perceived at different levels of maturity of ITIL implementation, the total number of the benefits realized as the maturity maturity of ITIL implementation increased, was provided. There are six levels in which the maturity model is divided into and those are level-0 'non-existent' in which the management processes are not implemented, level-1 'initial' where the process are hapazard and disorganized, level-2 'repeatable' in which the process are intuitive, level 3 'defined' in which the processes are documented and standard procedures determine the results/outputs, level-4 'managed' which is based on critical success factor, level-6 'optimized' which is the highest level of maturity with implementation of continuous interval cycle. Service quality, standardization of services, customer satisfaction, return on investment, business-IT alignment, reduction of IT downtime, operations through, implementation of a best practice, financial contribution control, call fix rate, morale of IT staff are the benefits summarized. Lack of executive sponsorship, business understanding ITIL objectives, lack of resources (time or people), lack of internal skills/knowledge, relating to ITIL, lack of funding/Cost of adoption, organizational/Cultural resistance to change, maintaining momentum/progress stagnates are the challenges which were suspected but none of these made an impact. The maturity of ITIL implementation among various industries like technology, public, financial and banking, professional, manufacturing, retail and distribution, utility, entertainment and hospitality, healthcare, telecommunication was accounted. The challenges decreased as the maturity of implementation increased and also the benefits increased.

The approach to implement and utilize the ITSM and ITIL are discussed in [9] along with the basic principles of IT service life cycle, managed IT services, control objectives for information and related technology Control OBjectives for Information and related Technology (COBIT), a four perspective strategy in translating vision. Help desk services, software and hardware maintenace services, logistics and procurement services, remote diagnosis and network management services, asset management, change management, MAC (move, act and change) activities are the IT services provided by managed service providers. Reduction in total cost of ownership, stable and predictable IT budget, increasing availability and support, providing access to latest technology with calculated risk and minimum investment, access to

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advanced skill, business process being easily adoptable, and allowing IT to focus on the core business are the services offered by managed service providers to clients. Cost cutting, flexibility, scalability, reducing capital investment are the main reasons for the evolution of IT service outsourcing. The best features of ITIL which makes it to be implemented by many enterprises and organizations are, the increased efficiency and predictability of IT, to bring down the support costs, enhance and improvise the quality of service provided to the customer, to implement end to-end service management. Business requirements drive the investments in IT resources that are used by IT processes to deliver enterprise information which in-return responds to business requirements, is the principle of COBIT. The maturity models developed as benchmark for comparisons, key goal indicators for monitoring IT goals, controlling the IT processes to determine the success factors, key performance indicators for monitoring the functionality and performance of IT processes are the guidelines provided by COBIT.

III. DISCUSSION

As seen from the literature review above various models are present to implement ITSM in an enterprise and the suitable method is to be selected by evaluating the challenges in implementing ITSM and the benefits of the same. The comparison between the existing designs such as ITIL v2, ITIL v3, ITSM v2 and ITSM v3 are to be thoroughly studied before going forward with the implementation. It can also be inferred that key steps to fine tune ITSM are defining process and roles clearly by creating a matrix which maps the person with proper role and knowledge to a task. The effectiveness of ITSM can be improved by repeating a set of steps repetitively namely defining process, roles, analysing model, analysing the process and looking for steps to improvising the setup. The ITSM encompasses the whole enterprise rather than a single block of the same by intertwining the events and services of IT firms. The other approach is to do the same on case-by-case basis as and when the issues arise. The fact that even after implementing ITSM, periodic updating of the same by redefining roles and processes is of paramount importance to the sustainability of the enterprise is established in the literature. It is very important that for a company to maintain good customer relationship to sustain for longer periods of time and to achieve this any queries raised by the clients should be resolved or attended as soon as possible. This can be achieved by having in place a Service level agreement (SLA) which notifies the user with the proper knowledge and permission of the issue raised. After the implementation of ITSM it is needed to evaluate the performance of the system with ITSM and improve the same. The evaluation framework will be different for each system depending on the process involved and the size of the enterprise. The evaluation has to be done on both corporate level and process level. While evaluating different perspectives have to be taken into account namely user, IT, management and technology each of which which will consider various parameters on which they are evaluated along with the adaption of SERVQUAL.

IV. CONCLUSION

As observed in the literature ITSM is not limited to IT organisations anymore and the same can be implemented in various types of enterprises to maximise the throughput of the system. At present there are many health care systems which have implemented ITSM in their system and are successful in providing better health care by letting ITSM take care of other things and allowing health care workers to do what they do best. The same can be said with respect to educational institutions where it is possible to increase the standard of teaching by having an ITSM system in place that helps the organisation in allotting the resources depending on the need. Application of ITSM is not limited to aforementioned situations and can be expanded to variety of systems that require managing things.

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