Technical Support at IMSIU a Case Study

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Abstract—This study aims to explore Technical Support (TS) system current state at the Imam Muhammad ibn Saud Islamic University (IMSIU) the female section. In specific, it explores cost, expressed by time; client satisfaction, technician satisfaction and aggregate TS performance. This study also presents some suggestions based on the analysis of collected data to improve the technical support system.

Index Terms—technical support, help desk and case study

I. INTRODUCTION

In recent times, technology became an integral part of many jobs. Using technology enhances the overall work efficiency, increases productivity, improve communication and decreases the time consumed to finish tasks. However, technical tools and facilities are prone to failure or malfunction. Thus, having a dedicated TS team or division is crucial to the technical infrastructure. TS responsibilities are varied in different organizations: hardware and software acquisition or development; installation and maintenance are the main functions expected by the TS in IMSIU.

In IMSIU, TS team is represented by the Information Technology Deanship that is divided into two sections, the male and the female section. In the female section that is, King Abdullah City for Female Students (KACF), the hierarchy starts from the Vice-dean, second level is the five divisions: Technical support, Network support, Training, Applications, Public Relations and Quality Assurance, Fig. 1.

The Technical Support division is responsible about maintaining technical support in different buildings. Each building has its own team that comprising a building administrator, technical support personnel and a call desk, as in Fig. 1. Currently there are five different buildings each having at least two colleges, multiple deanships and administrations. The current number of full time students in the female section is around 23,000 students.

Technical personnel are BSc holders, IT diploma holders or interns. As the female section is growing bigger in current years, the best of the interns are recommended to join the TS team upon finishing the internship.

The remainder of the study is organized as follows. In section 2, an overview of the related work is presented. In section 3, display the research questions & methodology that used in the study. In Section 4, discusses the result of the case study that applied. After that show suggestions solution in section 5, the last section given the discussion and the conclusions.

Figure 1. Hierarchy of information technology deanship at IMSIU, female branch.

II. RELATED WORK

With the digital era and the technical adaptation in industry and business, it is vital for organizations to relay on a technical infrastructure. This infrastructure is built, maintained and supported for both hardware and software by a TS service party.

Insuring quality of service and satisfying beneficiaries, customers’ technical needs is crucial to the success of the IT infrastructure. For that, researchers proposed methods to ensure better solutions and satisfactory results for the customer. Next is a review on some of the related papers.

Jantti, M. and Kujala, T. Ref. [1] have presented a list of challenges and working practices related to testing during the technical support process. They carried out a
The main goal of validation and testing during maintenance process is to provide confidence, validate and ensure that the service meets usability specifications and to enable detection and remedy of errors early.

Andrews, A. and Lucente, J. Ref. [2] proposed paper is interested in the costs associated with IT help desk operations and present challenges to profitability goals in an organization. Software failures are costly. For that, minimizing software failures in an operational environment are critical to the customer. To minimizing software failures, they suggested two types of software reliability models: 1) models that appraise software reliability from design parameters, 2) models that predict reliability of recorded defect information which helped to improve an IT help desk.

Zahedi M., Rahimov H. and Soleymani F. Ref. [3] discussed the problems faced corporations and companies often provide help desk support to their customers in the sense of installation and usage of their products and troubleshooting. To maintain customer’s time they suggested solution with two levels. the first-level help desk is prepared to answer the general queries, the most commonly asked questions, or provide resolutions that often belong to the list of frequently asked questions (FAQ). The second level help desk consists of specialized teams ready to solve more complicated problems which are not solved in the first level.

Mannonen, P. and Holta, V. Ref. [4] studied how to identify the core building blocks of problem solving experience of individual workers and the role the collaboration tools played in the problem solving experiences. To specify successful maintenance there are three criteria: Precise and timely information, time to transfer of information, and quick access to fix the problems. In this paper, a problem solving game to experiences problem solving in a safe environment by global technical support worker is presented. The game is used to get the workers to both solve actual problems and reflect on their earlier experiences.

Two strategies for developing the collaboration tools is shown in this paper. One is to underline the worker role in the whole problem solving experience. This would mean changing work habits. Another strategy would be to integrate collaboration functionalities into the current tools and systems. This would mean enabling the sharing of records straight from the record databases of the intranet of the organization.

III. RESEARCH QUESTIONS & METHODOLOGY

The TS system is accepting requests from different channels: email, phone and letter, Fig. 2.

For the TS system to be explored the case study aims to answer the following questions:

1. How much time is required to meet a request?
2. Are the tasks distributed depending on the importance of the request?
3. What are the factors that disrupt meeting the requests in time?

A. The Case Organization and Data Collection Methods

The data collection consisted of two main parts: First, a survey carried out on clients Ref. [5] and technicians Ref. [6] at KACF. The clients’ survey sample covered 79 clients and is composed of different types of employees as in Fig. 3. Second, a case study on technical support system triggered by the call desk at the KACF four buildings (321, 322, 323 and 324) and covered 88 request. The case study started from the date 16/2/2015 to 4/3/2015. The technical support workflow is depicted in Fig. 4.

B. Data Analysis Method

The key performance indicator (KPIs) measured in the case study are as following Ref. [7]:

1) Cost, expressed by time
2) Client Satisfaction.
3) Technician Satisfaction.
4) Aggregate TS Performance.

Depending on the measures, the rest of the case study is divided into three main parts: technical request, by that we focus on the request from several dimensions such as type, receipt time, steering time, and completion time. Second, is the client study and it focuses on client satisfaction, client type and problems that clients face. Third, is the TS team study and the most frequent issues and problems they face.
This section discusses the TS case study results. The case was reviewed from three points of views: technical request, TS team and clients.

A. Technical Request

There are many factors to be considered when studying the technical support center in terms of technical requests. Factors were mentioned in section 3.2. Receipt time, is the time of receiving the request in the call desk. Steering time is the time from receiving a request to reaching the requester office and it takes from 2 to 50 minutes depending on number of requests a technician needs to solve in one round. Completion time is measured form the minute a request arrives to the call desk until it is solved. Completion time practically could take between six minutes and two hours. The time could be longer because a requester is not reachable or many requests arrive in the same time with not available TS personnel to be assigned the request, Fig. 5.

At the beginning and end of the semester, the completion time is likely to be increasing because of the increased demand to print schedules, exams and certificates.

Requests are categorized into solved, unsolved and incomplete, Fig. 6. In some cases the technician could not solve a request immediately for some reasons as needing some extra parts to be fetched from the inventory like wires for example. Another reason is that not knowing the answer to the request and need to communicate the request to chief TS personnel. Cases where devices are sent to maintenance for a hardware problem are categorized as incomplete. One of the reasons for the late resolve or time waste is the information that is given to the call desk about a request; almost 31% of the information given for a request is not correct. In many cases the client cannot describe a request correctly. An example to that is, requesting to check a word processor as it is not working properly, while the case is that the client needs some help in formatting the document.

B. TS Team

Technical Support team is an important factor for the support, maintenance and intact technical infrastructure. Currently, each building contains three to four TS personnel, a supervisor and a call desk personnel. Chief TS personnel are having a minimum of around one to two years of experience and call desk personnel are having a minimum of three to four years’ experience. The average number of received requests per day is ten. Number of times a device is sent to the maintenance center is one to three times per week.

When multiple requests arrive, 59% of the TS team answers the request in the order of arrival. While 35% of the TS team priorities the requests depending on the importance of the request or the client, and 6% try to answer requests between the importance and order of arriving.

One of the most common problems faced by the TS team is that clients lack the understanding to their duties and tasks. For example, asking the TS personnel to fix a water heater.

Another issue is that the requester is not available at the office after doing a request; this wastes time and pends the request for an unknown period of time. In addition, inaccurate requests due to lack of basic technical knowledge.

C. Client

The clients of the TS system are employees in IMSIU, Fig. 3. As the figure show there are different kinds of job ranks some of which are critical and the time to meet their request should be minimal. For example, a request by the vice dean office is very important in priority and
53% of their requests took less than 30 minutes to solve. Also most of them were satisfied with the TS service, Fig. 7.

Client satisfaction is an important factor to the success of the TS system, 77% of the clients indicate that the technical support services is good or very good, while 8% of them were not satisfied.

Client satisfaction differs from a building to another, Fig. 8. Some reasons to the clients’ lack of satisfaction are: devices sent to the maintenance center take a long time reaching one week in some cases. Also, the late visit from the technician, this is due to receiving high requests at the same time. Another reason is that the requester needs an application that is out of the TS peroneal authorities, requiring further re-quest from the application administrator.

Observing the results of the case study and the survey, a remarkable difference is noted in the time required to complete a request. In Fig. 9 For example, 11% of the questioned clients answered that a requests takes 10 minutes or less to be solved. However, the case study showed that 45% of the requests are completed in less than 10 minutes.

One of the current constraints that effect TS work efficiency is limited resources. For example, there is one maintenance center which is out of the KACF. Sending a device for maintenance takes extra time and effort.

After discussing issues related to the TS system, this study proposes initial solutions that improve overall efficiency. The proposed improvements are:

- Implementing an immediate feedback mechanism to measure client satisfaction per each request. To accurately measure satisfaction.
- Implement an in-campus maintenance center to save time and effort.
- Implementing a list of clear priorities to solve requests. This is especially important when the number of requests exceeds the TS daily capacity.
- Providing basic technical workshops to the clients in order to minimize a request that comprises simple technical issues that could be solved easily by the client. For example, 13% from problems are to connect a printer or a scanner or a request on how uses a computer application, a word processor.
- Devolving and distributing a list of TS responsibilities and duties to minimize client inaccurate requests.
- Using a remote support system to install and maintain applications without the need for an actual visit to the requester and without the need to request authorization from application admin.
- At the time of writing the paper two improvements has happened to the TS system in KACF.
The TS personnel started the training on HP Service Manager Ref. [8] to receive requests online instead of through the call desk. This system provides fast and accurate ticket handling, improving process efficiency. Making it easier to monitor service performance proactively and to take necessary action via an interactive dashboard.

The TS personnel have finished the training on Dell KACE, which is a software management system that enables technicians to solve software requests remotely.

VI. CONCLUSIONS

The case study was applied on the TS call desk operation in IMSIU female section, KACF. Focusing on factors like cost, customer satisfaction, and aggregate TS performance. The study detects the current state of services provided by the TS pointing out the strengths and weaknesses. After that, collected data were analyzed and suggestions were provided to enhance and develop the technical support service.

As a continuation to this study, the factors measured could be further explored using the newly electronic support request system and the remote maintenance system. Comparing current manual and electronic TS call desk operation.

REFERENCES


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