#### INTERNSHIP TRAINING

#### **AT**

## DELL INTERNATIONAL SERVICES, BANGALORE

# APPLICATION SUPPORT MODEL AND ITS CHALLENGES IN EMR HEALTH ACCOUNTS

BY

Dr. ASHWINI SUSHIR

PG/14/015

UNDER THE GUIDANCE OF

PROF. DR. NISHIKANT BELE

POST GRADUATE DIPLOMA IN HOSPITAL AND HEALTH MANAGEMENT

2014-16



INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH, NEW DELHI



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#### To whomsoever it may concern

This is to certify that **Dr. Ashwini Sushir**, of **International Institute of Health Management Research**. **Delhi** has been working with Dell International Services for her summer project.

#### **Project Details:**

**Project Name** 

: Application Support Model and its Challenges in EMR

**Healthcare Accounts** 

Duration

: 08 February 2016 - 29 April 2016 (3 Months)

Location

: Bangalore

**Guide Name** 

: Dr. Vikrant Korde & S, Vigneshwaran

Sponsor Name

: Ajay Aiyar

She has successfully completed her project and her performance during the tenure of the internship has been found to be satisfactory.

Her findings in course of the project has been found to be practical and relevant and some of the recommendations will be incorporated on the floor on approval from the business.

Thanking You,

Ashish Kumar

Talent Acquisition Sr. Advisor

Dell International Services India Private Limited

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This is to certify that Dr. Ashwini R Sushir, a student of Post Graduate Diploma in Hospital and Health IT Management (PGDHM) from International Institute of Health Management Research, New Delhi has undergone internship training at "Dell International Services, Bangalore" from 8 February, 2016 to 29 April, 2016.

The Candidate has successfully carried out the study designated to her during internship training and her approach to the study has been sincere, scientific and analytical.

The Internship is in fulfilment of the course requirements.

I wish him att success in all her future endeavours.

Dr. A.K. Agarwal

Dean (Academics and Student Affairs)

HHMR New Delhi

Dr. Nishikant Bele Assistant Professor

IIHMR, New Delhi

## Certificate of Approval

The following dissertation titled "Application Support Model and its Challenges in Healthcare Accounts" at "Dell International Services, Bangalore" is hereby approved as a certified study in management, carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of Post Graduate Diploma in Health and Hospital Management for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

Dissertation Examination Committee for evaluation of dissertation.

Name

Swjeet Thakur Dr. Anarolli Ramachedon Surendra Tyagi

Signature

#### Certificate from Dissertation Advisory Committee

This is to certify that Dr. Ashwini R Sushir, a student of the Post-Graduate Diploma in Hospital and Healthcare IT Management has worked under our guidance and supervision. She is submitting this dissertation titled "Application Support Model and its Challenges in EMR Healthcare Accounts" at "Dell International Services India Private Limited" in partial fulfillment of the requirements for the award of the Post-Graduate Diploma in Hospital and Healthcare IT Management.

This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.

Dr. Nishikant Bele

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#### FEEDBACK FORM

Name of the Student

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Dissertation Organisation: Dell International Services

Area of Dissertation

: Application support model and its challenges in EMR

healthcare accounts

Attendance

: 100%

Objectives achieved

: Successfully completed dissertation and expectations

were met.

**Deliverables** 

: 1. Trained in different EMR products.

2. Shadowed on request tasks

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has a positive attitude.

Suggestions for Improvement: Can gain more knowledge in order to give expert

recommendation on the topic she has researched.

Signature of the Officer-in-Charge/ Organisation Mentor (Dissertation)

Date: Apr 29, 2016 Place Bangalore

# INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH, NEW DELHI

#### CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled "Application support Model And its Challenges in Healthcare Accounts" submitted by Dr. Ashwini R Sushir, Enrolment No. PG/14/015 under the supervision of Dr. Nishikant Bele for award of Postgraduate Diploma in Hospital and Health Management of the Institute carried out during the period from 8<sup>th</sup> February 2016 to 29th April, 2016 embodies my original work and has not formed the basis for the award of any Degree, Diploma Associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

Dr. Ashwini R Sushir

PG/14/015

PGDHM (2014-16) - Health IT

## **ACKNOWLEDGEMENT**

Hard work, guidance and perseverance are the pre requisite for achieving success. Support from an enlightening source helps us to proceed on the path to it. I wish to thank first of all the almighty that provided me energy for the successful completion of summer training.

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# **List of Abbreviations**

1.	IT	Information Technology
2.	EMR	Electronic Medical Record
3.	SOW	Statement of Work
4.	CAB	Change Advisory Board
5.	CMDB	Change Management Database
6	L1/L2/L3	Levels of support
7.	TATs	Turnaround Time
8.	RCA	Root cause Analysis

### **Organization Overview:**

Dell is a leading provider of end-to-end scalable solutions for customers around the world—delivering technology solutions that enable people everywhere to grow, thrive, and reach their full potential. Michael Dell founded the company more than 30 years ago in Austin, Texas, and since then we have been listening to and engaging our customers with their insight guiding everything we do. Dell's end-to-end solutions strategy—and the innovations and investments it makes to enable that strategy—are, as you would expect, truly customer-inspired.

#### **Dell's industry focus**

- Healthcare and life sciences
- Banking, financial services, securities and insurance
- Manufacturing, energy and utilities
- Consumer industries (retail, packaged goods and logistics)
- Education, state and local government
- Travel and hospitality
- Telecommunications, media and technology
- U.S. federal government

#### **Dell in Healthcare**

Dell has established four solutions groups to support customer segments—end-user computing, enterprise solutions, software and services—and is committed to designing and delivering technologies that are practical, relevant, and customer-inspired. Dell's goal is to provide the best tools, products, and services for realizing hosting efficiencies, while improving service delivery. Through automation, standardization, and the right set of tools, IT works smarter to provide the "always-on and anywhere" service that end users expect.

As a leader in healthcare IT for more than 30 years, Dell is continuously chosen by customers to understand and identify the right solutions that help improve care, drive overall

efficiency, and manage financial risks. The company offers end-to-end solutions for healthcare providers and health plans, including hardware, software, hosting, application implementation and support, systems integration, consulting, business process services, and services for Electronic Health/Medical Records (EHRs/EMRs), Health Insurance Exchanges (HIXs), revenue cycle management, and policy administration.

Dell's global reach encompasses operations in North America, Europe, the Middle East, and Asia. Dell currently manages IT projects for more than 1,000 hospitals worldwide. The team of experienced technologists within Dell has gained an in-depth understanding of the challenges inherent in integrating IT solutions within the most complex healthcare multivendor environments.

Dell's secure end-to-end solutions and services enable healthcare organizations to solve critical problems and enhance patient care. The company's goal is to build and support information-driven healthcare environments. This dynamic environment empowers caregivers and patients with technology, data, and processes to integrate new IT services into their daily routines for the betterment of care delivery.

Dell has successfully assisted customers with meeting their organizational goals through offering support from extremely qualified and experienced individuals who "know" healthcare organizations and workflow processes.

#### **Industry Recognition**

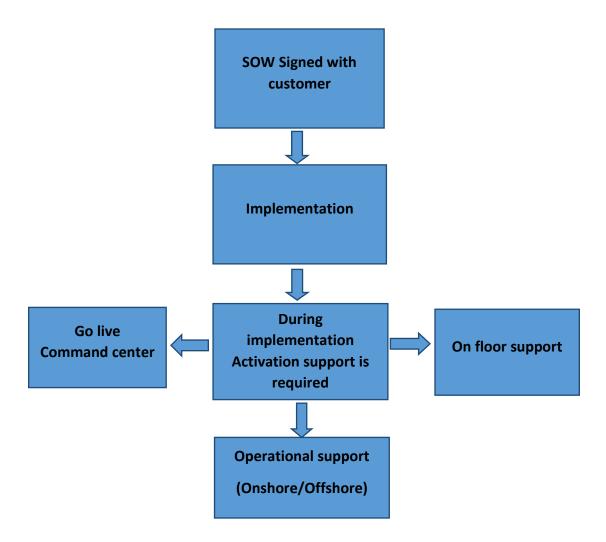
- Positioned by Gartner in the "Leaders" quadrant of the *Gartner Magic Quadrant for Data Center Outsourcing and Infrastructure Utility Services, North America* for the fifth consecutive year.
- Ranked "#1 IT Services Provider to Healthcare Providers," by Gartner for the sixth straight year.
- Positioned as a leader in Everest Group's "IT Outsourcing in the Healthcare Provider Industry—Service Provider Landscape with PEAK Matrix Assessment" for a third consecutive year.

## **Introduction**

#### • Product based industry and Support based industry

- Product based companies are the ones which build their own product and sell it in
  the market. Product based firms are focused on their core product maintain their core
  focus (on their product) and leverage the specialties/skill sets of the service based
  counterparts.
- In this way they provide the product as well as the support to their customers and the customers don't need to go to other service based companies.
- E.g.: Cerner, All scripts, Epic (They provide the product as well as the support to their customers)
- Service based companies are the ones which builds the applications or a part of them for other companies and clients. They often work on the concept of outsourcing.
   Their work is only in the form of support, maintenance or even development, but only a part of it.
- Earlier most software organizations were service based. They concentrated on basic technology and skills. There were few product companies, now this has rapidly changed.
- e.g. DELL services ,Infosys, Cognizant, Wipro (they focus on the support services to the customers)

• Support work starts when..



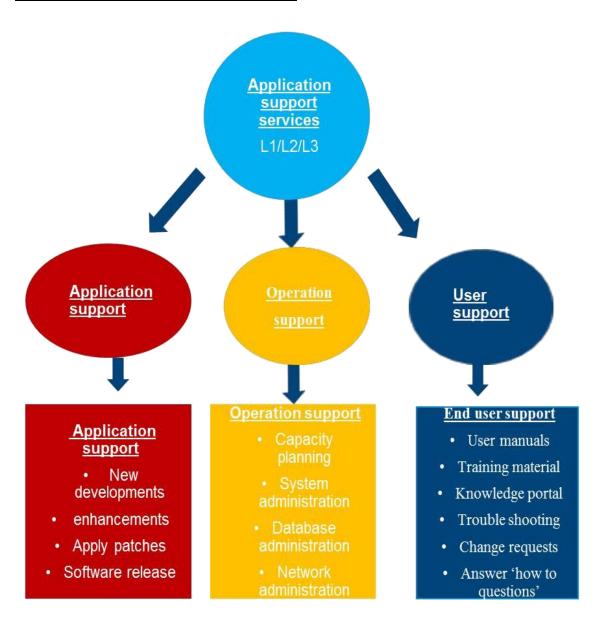
## > Support Responsibilities

- Work with end users to troubleshoot and resolve technology and software issues over the telephone, through email, and via a web based remote desktop control tool.
- Work with customers and manufactures to organize returns and any replacement or repairs.
- Manage incoming repair inventory as well as exchange /loaner device inventory.

## > Required Skills/Knowledge

- Strong verbal and written communication skills.
- Ability to quickly assess client requests and identify solutions.
- Strong customer-focused orientation
- Attention to detail

#### **Functions of support team in IT Industry**



#### • Functions of support team in depths observed in the internship span

- Incident management
- Request management
- Problem management
- Change management
- Monitoring it is monitoring the hubs to avoid occurrence or failure of working of any application.

#### • Service Level Agreement

A service level agreement is a document which defines the relationship between two parties: Service provider and the Hospitals. This is an extremely important item of documentation for both parties.

It should identify the following:

- Identify and define the customer's needs
- Provide a framework for understanding
- Simplify complex issues
- Reduce areas of conflict
- Encourage dialog in the event of disputes
- Eliminate unrealistic expectations

• Specifically it should embrace a wide range of issues. Amongst these are usually the following:

## Services to be delivered:

- Performance, Tracking and Reporting
- Problem Management
- Legal Compliance Resolution of Disputes
- Customer Duties and Responsibilities
- Security
- Intellectual Property Rights and Confidential information.

## **Objective**

The objective is to study the work process of support team and study the challenges faced by the healthcare IT Company.

# **Scope of Project**

Studying the support model and its challenges will be helpful in

- Increasing Customer satisfaction
- Reducing the Turnover time (TAT) for Resolving tickets.
- Increasing the work efficiency
- Stream lining the work processes
- Automation of the process

## Literature review

\* Knowledge Management Model for Information Technology Support service (Maria Mvungi and Ian Jay, University of Cape Town, South Africa) Electronic Journal of Knowledge Management Volume 7 Issue 3, available online at www.ejkm.com

This research evaluates how an organization can conceptualize knowledge management (KM) of IT support in order to maximize user productivity. Firstly, the approach involved participant observation to gather information about the work flow of Electronic and Information Technology (EIT) support forming the first attempt at open coding. Secondly, semi-structured interviews, as well as the use of the Repertory Grid Technique were used to gather multiple perspectives of support personnel

www.ejkm.com/issue/download.html?idArticle=187

❖ Delivering high availability services using Multi-tiered support model Phillip J. Windley, Ph.D. Chief information officer.

Kindley, Mark, "Hidden Assets," CIO Insight, October 2001

Delivering high availability (HA) services in a networked environment requires more than buying the right hardware and software. HA service delivery is predicated upon having the correct platform (hardware and software), people, processes, and organization. This document describes a model based on a hierarchical or multi-tied support (MTS) model for organizing to deliver high availability services.

 $\underline{http://www.windley.com/docs/Tiered\%20Support.pdf}$ 

❖ In a hybrid world, SAP support services face challenges by <u>Chris Maxcer</u>

"We believe support is a customer care business, not a reacting on incidents business," Veith explained. "We strongly believe that if we provide good support and service, we know it will drive decisions in the future, because we believe that beefing up support is the right decision, and especially for cloud, where you have a more funneled offering, we can deliver a better way to deliver knowledge that is highly appreciated by customers." <a href="http://searchsap.techtarget.com/tip/In-a-hybrid-world-SAP-support-services-face-challenges">http://searchsap.techtarget.com/tip/In-a-hybrid-world-SAP-support-services-face-challenges</a>

Some of the Basic Benefits of IT Support for Managing Systems

Hank Aaron on February 01, 2016

With the economy on an enduring descending slide, numerous businesses are looking for approaches to upgrade their resources without compromising their products and services. For some, this has implied effectively and creatively searching for approaches to obtain more for less - whether as to sourcing materials, distribution forms, or even internal operations. Incalculable organizations, for instance, have discovered an answer in IT Support management systems. What's more, word is spreading quickly as to the estimation of such a service. http://www.sooperarticles.com/technology-articles/support-services-articles/some-basic-

benefits-support-managing-systems-1473312.html#ixzz43EANugHA

Creating a Successful Support Model for the SAS Enterprise Intelligent Platform Jerry High, Blue Cross and Blue Shield of Minnesota, Eagan, MN

SAS has a robust set of tools that provide business analysts many capabilities ranging from statistics and data mining to data integration and business intelligence. In the early years, prior to version 9, typical analysts would simply—use the SAS programming language and write code to obtain the desired results. Support had two aspects: one from the systems administration team where the SAS software was simply installed and made available to the analysts, the other from the SAS community sharing their insights about business problems and coding techniques. Today under release 9, more specifically with the introduction of the SAS Enterprise Intelligence Platform, the capabilities have increased dramatically. So, too, has the need for a proper support model to ensure that today's sophisticated business analysts and other general consumers of information can leverage the power of SAS to the fullest.

http://support.sas.com/resources/papers/proceedings10/177-2010.pdf

## **Background of project**

A successful support model is important to any company that wants to leverage information for better operating results. Analysts use various tools to acquire data and package it into useful information that is actionable. Decision makers of all levels in the organization need access to this actionable information. Effective delivery of this information is obtained through a combination of people, process and technology.

A good support model is important to assure that these three components work effectively together. Much effort goes into creating one that works well for the user community. It takes time to develop and requires support from the organization within. It takes an understanding of the internal infrastructure followed by carefully identifying the role of the support team.

The support team has a responsibility to the company to support the users with solutions that work for them while being careful to abide by the rules defined within the organization. While living up to the responsibility the support team faces challenges which they have to overcome.

The report contains the study of the challenges the support team faces done with the observation and interview methods along with the analysis of the data recorded with the help of Percentage analysis and Fishbone diagram and the possible recommendations mentioned for the same.

• Any software will always go through a software development

Lifecycle –

#### > Software development lifecycle (SDLC)

Each process model follows a particular life cycle in order to ensure success in Process of software development.

There are following six phases in every Software development life cycle model:

- 1) Requirement gathering and analysis
- 2) Design
- 3) Development
- 4) Testing
- 5) Implementation
- 6) Support and Maintenance
- 1) Requirement gathering and analysis: Business requirements are gathered in this phase. This phase is the main focus of the project managers and stake holders. Meetings with managers, stake holders and users are held in order to determine the requirements like; who is going to use the system? How will they use the system? What data should be input into the system? What data should be output by the system? These are general questions that get answered during a requirements gathering phase.

- 2) **Design:** In this phase the system and software design is prepared from the requirement specifications which were studied in the first phase. System Design helps in specifying hardware and system requirements and also helps in defining overall system architecture.
- 3) Implementation / Coding: On receiving system design documents, the work is divided in modules/units and actual coding is started. Since, in this phase the code is produced so it is the main focus for the developer. This is the longest phase of the software development life cycle.
- 4) **Testing:** After the code is developed it is tested against the requirements to make sure that the product is actually solving the needs addressed and gathered during the requirements phase. During this phase all types of functional testing like unit testing, integration testing, system testing, acceptance testing are done as well as nonfunctional testing are also done.
- 5) **Deployment:** After successful testing the product is delivered / deployed to the customer for their use .As soon as the product is given to the customers they will first do the beta testing. If any changes are required or if any bugs are caught, then they will report it to the engineering team. Once those changes are made or the bugs are fixed then the final deployment will happen.
- **Maintenance / support:** Once when the customers starts using the developed system then the actual problems comes up and needs to be solved from time to time. This process where the care is taken for the developed product is known as maintenance.

SSS

## > Type of software development models

- Waterfall model
- Agile model

## • The Support Model is comprised of six parts:

#### 1. General Information Contact Channels

- Transition Desk
- Hours of Support
- Run Desk Hours of support

## 2. Staffing

- Production Support
- Transition Desk
- Transition Team

## 3. Logistics

- Facilities

PhonesWorkstation

- Access

- 4. Roles and Responsibilities
- Funding Request Planning
- Transition Desk
- Staffing Model Planning
- Run Desk Staffing
- ITSM Configuration
- 5. Support Model Review and Sign-off

#### Levels of support are -

## L1 First Line Support: Telephone helpdesk or answer center support

- This support level receives inbound requests through channels like phone, Web forms, email, chat, or other means based on the documented agreement with the Client.
- L1 support typically includes individuals that have very limited technical expertise.
- L1 is intended to be the first to acknowledge an incident.

- L1 support tracks tickets until successfully resolved.

#### **L2 Second Line Support**

- These technicians have more experience than L1 support technicians and manage incidents raised by the L1s or as agreed in documented SLA (Service Level Agreement) timelines.
- L2 technicians follow documented processes and workflows provided by Clients or higher level support representatives, vendors, product management, etc.
- They are expected to escalate to the L3's when documentation is insufficient to complete the tasks or do not solve the incident.

## **L3 Third Line Support**

- L3 technical experts resolve issues that are typically difficult or subtle. L3 engineers participate in management, prioritization, minor enhancements, break fix activities, problem management, stability analysis, etc.
- These escalations can often involve product bugs, detailed configuration requirements, or other expert level guidance.
- When all other levels of support cannot solve a problem, a request is made to this level of support usually managed by the L3 support technician or through special project/program management resources

## **Support services provided by the Organization**

## > Support by product

- Product Support
- Drivers and Downloads
- Download Center
- Manuals
- PC Diagnostics
- Retail Registration
- My Products and Services
- Support History and Dispatch
- Subsidiaries
- Support Video Library
- Product Recalls

## > Support by topic

- Windows
- Networking and Wireless
- Security & Virus
- Alien ware
- Application and Software Support
- Monitors
- Support Videos
- Printer Support

### > Order support

- Checking Order Status
- Customer Support Request Status
- Problems with an Order
- Order Changes and Returns
- Invoice and Shipping Documents
- My Account
- Payment and Tax
- Shipping and Delivery

#### > Warranty and parts

- Warranty Status
- Warranty Extension and Upgrade
- Retail Registration
- Ownership Transfer
- Expired Warranty Service
- Service Contracts
- Warranty Parts Return (US Home Customers)

## Methodology

Interviews were taken for studying the support services work process -

Time Span – 8 February – 29 April 2016

The study is a combination of Primary and secondary research.

The interview was conducted among 40 Employees of EMR teams with the help of a Questionnaire.

# Support model and its challenges interview questions

## **Employee Work experience -**

- 1) What are the primary responsibilities of a support employee?
- 2) What is your work profile?
- 3) What skills are needed to work as support employee?
- 4) What are the challenges you face while working on your project?
- 5) Which according to you are the major challenges in support work?
  - knowledge
  - Time management
  - Data insufficiency
  - Misunderstandings between team members
  - shifts
- 6) How does the above points affect the work process?
- 7) Do you follow the response and resolution timelines while solving the incident tickets?
- 8) Example of a severity 1/2 incident along with the issues you faced while solving the ticket
- 9) What according to you are your team strengths and weaknesses?
- 10) What type of trainings do you go through to work on the applications? Are they enough? Do you get the time to attend them?
- 11) Do you have to contact the onsite people for the work?
- 12) What are difficulties you face while contacting the onsite employees?
- 13) Except the work related issues what other issues do you face as a support employee?
  - Transport
  - Food in canteen
  - Working environment
  - Others
- 14) How satisfied are you with your work?
  - Very satisfied
  - Dissatisfied
  - Neutral

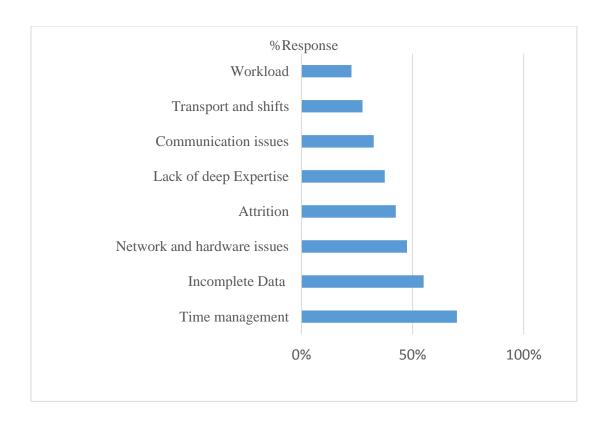
Tools used for Analysis

- (i) Percentage analysis
- (ii) Fishbone diagram

## (i) Percentage Analysis

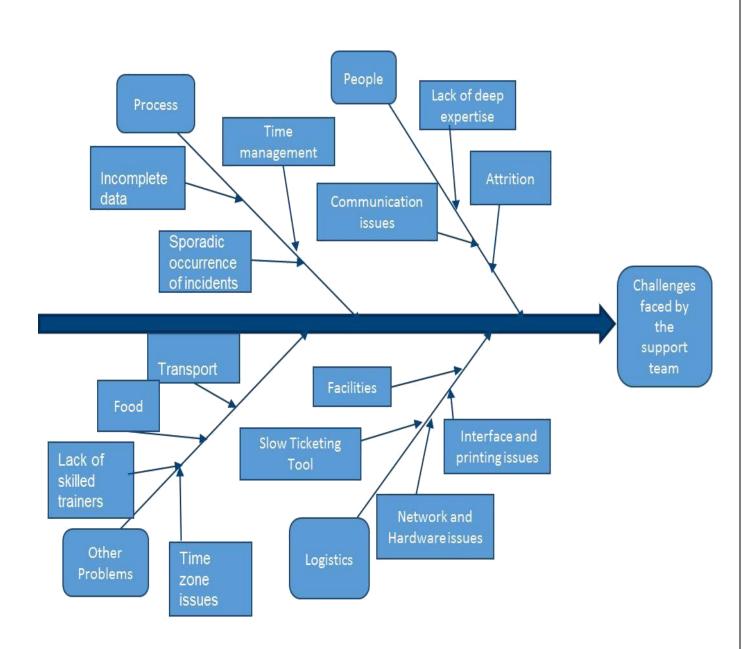
Challenges	%Response
Time management	70%
Incomplete Data	55%
Network and hardware issues	47.50%
Attrition	42.50%
Lack of deep Expertise	37.50%
Communication issues	32.50%
Transport and shifts	27.50%
Workload	22.50%

<sup>\*</sup>The above Table shows the challenges along with the number of employees opted for each of them.



<sup>\*</sup>The above graph shows the challenges along with the number of employees opted for each of them in graphical manner.

## (ii) Fishbone Diagram representing the challenges of support team



## Challenges faced by the support team

Major issues which are faced by the support team are

<u>Lack of Deep Expertise</u> – lack of deep expertise on the use of applications is another reason. The presence of employees from both medical and IT background is a positive point for us the negative being the lack of deep expertise on the applications.

<u>Time management</u>- Dell services work for US based hospitals and managing the work timings for the availability of the users is the major issue. As most of the work of those hospitals is in night shifts as per the Indian timings, it becomes difficult for the employees working in day shifts to have the proper availability of the data. Also mismanagement of time by employees is a reason for time management issues. Many a times for resolving the incidents data is not sufficient In that case for the getting the complete data we have to contact back the facilities which consume much time and in this way the time taken for solving the incidents is prolonged.

<u>Incomplete Data</u>- Getting in touch with the physicians who raise the ticket for some issue and do not explain it in detail which is must for incident resolving is a tedious job leading to delayed issue resolving.

<u>Attrition</u>- it is the most common problem seen in every organization in the IT industry.

<u>Communication Issues</u>- Misunderstandings and personal issues between colleagues, also the communication gaps between the offshore and onshore teams Is a challenge.

<u>Hardware and Network Issues</u> – Slow e-ticketing tools, slow internet connection pose a challenge for working.

**Sporadic Occurrence of Issues-** Sometimes sudden issues arise such as some work was started in one person's shift and that continues even after the work hours, this causes the person to work till late which is challenging ultimately.

<u>Handling resources (Shifts)</u> –Working in shifts, adjusting leaves is also a difficult task.

<u>Transport issues</u> – The shifts timings hamper the flexibility of the female employees as they have to leave the office premises before 8pm.

<u>Food and Facilities</u> – Monotony in food, also in case of facilities air conditioners are not provided to employees who want to work on weekends.

## **Recommendations**

#### Lack of deep expertise in specific cases and mismatch in expectations from seniors

Compulsory trainings on applications, Reference books, and flowcharts should be provided to employees. Working on the applications will eventually increase the depth of knowledge.

#### **Time management**

Setting priorities of work setting goals to complete the work with efficient use of time will be helpful in time management.

### **Incomplete Data**

Creating templates with all necessary details for extracting all data at once will prove beneficial.

#### **Attrition**-

Backup should be planned in the teams, Induction plan, and knowledge sharing can help in dealing with attrition.

#### **Communication issues** –

Misunderstandings among the Team members should be mutually solved or by getting the managers involved in it. Good Rapport should be developed with onshore teams.

#### Network issues and Hardware issues –

Switch to data network cards, timely check on the hardware by the IT support team will solve the problem to some extent.

#### Sporadic occurrence of incidents-

Support team should diligently handover the tickets to onshore Team when their shifts are over.

## Handling resources (Shifts) -

Shifts and leaves should be managed as per the workload, and employees should have the mutual understandings to manage their timings.

#### Transport issues in case of female employees –

As the shifts are defined the flexibility is hampered. The frequency of cabs should be increased

#### Availability of food and facilities on weekends -

Regular committee meetings for keeping the quality check, changing the menu, adding variety of food ,also the facilities should be provide Air conditioners to the employees who want to work on weekends.

## **Conclusion**

The company has highly ethical and talented pool of professionals from the medical and IT background which is a positive point though there is lack of a deep expertise in specific cases that can be addressed by necessary trainings. There is high service efficiency given the fact that SLA breaches are very rare. Formal procedures exist for Root cause analysis (RCA) and remedial actions to prevent recurrence of similar issue. There is lot of scope for progress as we plan to acquire maximum work and to take up the implementation work too in the coming future.

## Learning

During the internship in Organization learned about various things given below:

- Underwent trainings for various processes followed in the organization.
- Workflow of the Application support team.
- How the ticketing system works.
- Daily monitoring tasks
- Underwent other trainings related to healthcare IT industry.

## **References:**

- http://www.supportindustry.com/essentiallinks/index.htm
- https://en.wikipedia.org/wiki/Systems\_development\_life\_cycle
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- http://nextgen.umich.edu/methodology/documents/Support-Model-Template.doc