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IMPACTANDIMPLEMENTATIONOFHOSPITALINFORMATIONSYSTEMINTHE SERVICE QUALITY OF MISSIONARY HOSPITALS IN ERNAKULAMDISTRICT

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ABSTRACT

ThePresent research study on a hospital information system (HIS) is an elementofhealthinformaticsthatfocusesmainlyontheadministrationalneedsofhospitals.Inmanyimplementations,aHISisacomprehensive,integrated informationsystem designedtomanage all the aspects of a hospital's operation, such as medical, administrative, financial,andlegalissuesandthecorrespondingprocessingofservices.Hospitalinformationsystemisalso known as hospital management software (HMS) or hospital management system. In thisresearch study on hospital information system in Ernakulam district taken on six missionhospital with a sample size of 260 respondents on an empirical framework. The populationsizeofthesixhospitalswasassessedthroughinterviewswithhumanresourcesmanagementspecialistsinsixhospitalsTheResearchshouldincludethedevelopmentandinvestigationon HISandimplementationonHISservicequality.MajorityLisihospitalservicequalityishighgrowth with response of head medical unit in HIS. The components of highly satisfied withfinancialsoftwareserviceisexcellentinHISinErnakulamdistrict.HIShavebecomeoneofthe most challenging and promising fields of research, education and practice for medicalinformatics,withsignificantbenefitstomedicineandhealthcareingeneral.

Keywords:Hospitalinformationsystem,Implementations,Professions,Components,servicequality,HospitalManagementSoftware

INTRODUCTION

Ahospitalinformationsystem(HIS)isanelementofhealthinformaticsthatfocusesmainlyontheadministrationalneedsof hospitals.Inmanyimplementations,aHISisacomprehensive,integrated informationsystem designedtomanagealltheaspectsofahospital's operation, such as medical, administrative, financial, and legal issues and thecorrespondingprocessingofservices. Hospitalinformationsystemisalsoknownashospitalmanagementsoftware(HMS)orhospitalmanagementsystem.Hospitalinformationsystems

provide a common source of information about a patient's health history, and doctorsschedule timing. The system has to keep data in a secure place and controls who can reachthedataincertaincircumstances.Thesesystemsenhancetheabilityofhealthcareprofessionals to coordinate care by providing a patient's health information and visit historyattheplaceandtimethatitisneeded.

LITERATUREREVIEW

Nils-HendrikBenning,PetraKnaup(2020),HospitalInformationSystems,159-173,doi:10.3233/SHTI200675. Hospitalinformationsystems(HIS)havetobeconsideredassocio-technicalsystems,whichconsistoftechnicalcomponentsaswellasofthehumanaspectlikehospitalstaffandpatients.HISstrivefortheoptimizationofinformationlogistics,tosupporttasklikepatientcareandadministrationofahospital.Tosystematicallymanagesuchcomplexsystems,HIScanbeanalyzedonthreelayers:First,tasksandentitytypesshouldbeconsidered.Entitytypesrepresentinformationwhichisusedandupdatedbytasklike'PatientAdmission'or'DecisionMaking'.Second, applicationcomponentsofaHISshouldbeanalyzed,theycanbeeithercomputer-basedorpaper-based;bothofthemsupporttasksfromthefirstlayer.Therefore,theystoreandexchangeinformation.Thethirdlayeranalyzesphysicaldataprocessingcomponentsofa HIS,likeservers,workstations ornetworks.Thethree-layeredviewcanbeusedforthesystematicinformationmanagementofHISonthreeperspectives:strategicinformationmanagementplansthedevelopmentofthewholeHISforthenext5yearsandlonger.Measuresfromstrategicinformationmanagementareimplementedasprojects,coordinated bythetacticalinformationmanagement.Theoperational information management ensures a continuous and reliable operation of the HIS.**ReinholdHaux,Healthinformationsystems-past,present,future,**In1984,PeterReichertzgavealectureonthepast,presentandfutureofhospitalinformationsystems.Inthemeantime,therehasbeenatremendousprogressinmedicineaswellasininformatics.Oneimportantbenefitofthisprogressisthatourlifeexpectancyisnowadayssignificantlyhigherthanitwouldhave beenevensomefewdecades ago.Thisprogress,leadingtoagingsocieties,isofinfluencetotheorganizationofhealthcareandtothefuturedevelopmentofitsinformationsystems.Twentyyearslater,referringtoPeterReichertzlecture,butnowconsideringhealthinformationsystems(HIS),twoquestionsarediscussed:whichwerelinesofdevelopmentinhealthinformationsystemsfromthepastuntiltoday?Whatareconsequencesforhealthinformationsystemsinthefuture?ThefollowinglinesofdevelopmentforHISwereconsideredasimportant:(1)theshiftfrompaper-basedto

computer-basedprocessingandstorage,aswellastheincreaseofdatainhealthcaresettings; (2) the shift from institution-centered departmental and, later, hospital information systemstowards regional and global HIS; (3) the inclusion of patients and health consumers as HISusers, besides health care professionals and administrators; (4) the use of HIS data not onlyfor patient care and administrative purposes, but also for health care planning as well asclinical and epidemiological research; (5) the shift from focusing mainly on technical HISproblemstothoseofchangemanagementaswellasofstrategicinformationmanagement;(6)the shift from mainly alpha-numeric data in HIS to images and now also to data on themolecular level; (7) the steady increase of new technologies to be included, now starting toincludeubiquitouscomputingenvironmentsandsensor-basedtechnologiesforhealthmonitoring.AsconsequencesforHISinthefuture,firsttheneedforinstitutionaland(inter-)national HIS-strategies is seen, second the need to explore new trans institutional HISarchitectural styles, third the need for education in health informatics and/or biomedicalinformatics, including appropriate knowledge and skills on HIS. As these new HIS areurgentlyneededforreorganizinghealthcareinanagingsociety,aslastconsequencetheneedforresearcharoundHISisseen.Researchshouldincludethedevelopmentandinvestigationof appropriate trans institutional information system architectures, of adequate methods forstrategicinformationmanagement,ofmethodsformodellingandevaluatingHIS,thedevelopmentandinvestigationofcomprehensiveelectronicpatientrecords,providingappropriate access for health care professionals as well as for patients, in the broad sense asdescribed here, e.g. including home care and health monitoring facilities. Comparing theworldin1984andin2004,wehavetorecognizethatweimperceptibly,stepwisearrivedatanew world. HIS have become one of the most challenging and promising fields of research,education and practice for medical informatics, with significant benefits to medicine andhealthcareingeneral.

YousefMehdipour&HamidehZerehkafi(2013),HospitalInformationSystem(HIS):AtaGlanceAugust2013,AsianJournalofComputerScienceandInformationTechnology 01(02):2321-5658. Information is the foundation for policy making, planning,programming, and accountability. Health informatics is the intersection of informationscience,computerscience,andhealthcare.Itdealswiththeresources,devices,andmethodsrequired to optimize the acquisition, storage, retrieval, and use of information in health andbiomedicine. Boddyet. al (2005) describes an information system (IS) as"a set of people,procedures and resources that collects data which it transforms an`d disseminates". MostprofessionallyrunhospitalsandclinicsnowrelyonHospitalInformationSystems(HIS)that

help them manage all their medical and administrative information. A health informationsystem(HIS)canbedefinedas"comprisingallcomputer-basedcomponentswhichareusedtoenter,store,process,communicate,andpresenthealthrelatedorpatientrelatedinformation,andwhichareusedbyhealthcareprofessionalsorthepatientthemselvesinthecontextofinpatientoroutpatientpatientcare"(UMIT,2005).ItisalsoknownasHealthcareInformationSystem.Inhealthorganizationsuchashospitals,implementationofHISinevitable due to many mediating and dominating factors such as organization, people andtechnology. Data for this paper were collected through bibliographic and internet research.Four key areas will be addressed in this paper: 1. An analysis of HIS and its components. 2.Benefits of HIS 3. Phases Of Implementation Of HIS 4. Suggestions for selecting of HISStudy showed that End-user training is crucial for the success of an HIS. Without the usersbeing trained properly in their assignments the chance of failure increases substantially.Trainingisnotonlyimportantasameanforteachingtheindividualshowtoperformcertaintasks,it'salsooneofthemostpervasivemethodsofcommunicatingorganizationgoalstothepersonnel.

MohamedKhalifaMD,OsamaAlswailem,HospitalInformationSystems(HIS)Acceptance and Satisfaction: A Case Study of a Tertiary Care Hospital, ProcediaComputer Science, Volume 63, 2015, Pages 198-20, Elsevier. The main objective of thisstudyistoevaluatehospital informationsystems(HIS)acceptanceandsatisfaction, throughexploring the influential factors that might increase or decrease acceptance and satisfactionlevels among different healthcare professionals, in order to provide solutions for successfulHIS implementation. METHODS: The study used objective quantitative survey methods tocollect data directly from different types of HIS users. The questionnaire included fivesections;ademographicuserinformationsection,ageneralHISassessmentsection,asectionabout accessibility and availability of computers, a section about HIS and patient care and asectionaboutsatisfactionwithHIS.RESULTS:Theavailabilityofcomputersinthehospitalwas one of the most influential factors, with a special emphasis on the availability of laptopcomputersand computers on wheels to facilitate directand immediate data entry andinformation retrieval processes when healthcare professionals are at the point of care. Usersbelieved that HIS might frequently slow down the process of care delivery and increase thetimespentbypatientsinsidethehospitalespeciallyduringslowperformanceandresponsiveness phases. RECOMMENDATIONS: Three main areasshowed improvementpotential; system performance, organizational support and users’feedback. Improving theperformanceoftheHISisverycrucialforitssuccess,inadditiontoincreasingthe

availability of computersat the point of care. User friendliness and new innovative methodsfor data entry, such as automated voice recognition,can improve the workload and enhanceinformation quality. Organizational support is very crucial, through providing training,dedicated and protected time during working hours for users to learn and practice on HIS.Better and more reliable channels of communication and feedback are needed to considerusers'complaints,suggestionsandcontribution.

PHASESOFIMPLEMENTATIONOFAHIS

Thephases of a software implementation begin with the stage in which it is decidedtoimplementanHISsystem,andnotanothertypeoftool.Thisisfollowedbytheprocessofd ecidingwhichHISwillbeimplementedandwhich consultancy willbeassignedtoimplementtheproject.Onceselected,theimplementationphasebegins,inwhich thesystemwill be parameterized; For this phase, the consulting firm that leads the project proposes aworkmethodology,experienceinimplementationsandtraining.

COMPONENTSOFHOSPITALINFORMATIONSYSTEMS

Ahospital'sHISisaconglomerationofseveralspecializedsub-systemsthatmanagedifferentfunctionsofahealthcareorganization'sfunctioning.Themaincomp onentsthataHIScanbedividedintoarethefollowing:

CoreManagement:

Thecoresystemofthehospitalorthehospitalmanagementsystemisanindependentorclou d-basedmedicalmanagementframework.Thissystemcapturesandintegratestheday-to-dayactivitiesofeachdepartmentofthehospitalsystem.

FinancialSoftware:

Chieffinancialofficersandthoseresponsibleforthe revenuecyclemanagementcarryout their management and strategic planning through this software component. SaaSaccounting and financial management plug-ins often interlink to form the overallfinancialmanagementsystem.Withpropermonitoringofthehealthcareorganizati on's revenue cycle, the bottom line can be enhanced and resources can befreeduptospendonvalue-enhancingoperations.

Personnel/ERP:

Patientandemployeemanagementtoolsaretogethertakencareofthepersonnelmanageme ntcapabilitiesofHIS.Thesesystemsfacilitatetransparentcommunication,

resource allocation, and scheduling between patients and medical staff across multiplefacilities and departments. The major suppliers of ERP systems, in general, arestrategically considering the potential of healthcare to be a relatively new and fast-growingmarket.

MedicalDocumentation:

While EHR and EMR systems track patient appointments, care notes, and financialinformation, a dedicated documentation framework must be in place in the overallHIS.Thishelpsensurethatallhigh-priritydocuments,frompatientrecords,personnel details, inventory, hospital finances, etc. are maintained across secureencryptedportalswithproperaccesscontrol.

AssetTracking:

Asset tracking or medical inventory management systems enable hospital staff tomonitor inventory across the inventory lifecycle right from purchase to compensation.Whenanitemintheinventory,beitpharmaceuticalsorsurgicaltools,isonthe brinkof expiry, it can be replenished or stocked back up. It is a means to ensure that thebestpracticesarefollowedintermsofinventorymaintenance.

MedicalTransportationManagement:

It is required by US federal law that the least costly type of transportation takespatients to their relevant medical appointments. This is true for both emergency andnon-emergencymedical transportationandthetracking, maintenance,andallocationofthesevehiclesisanessentialfunctionalcomponentofHIS.

OBJECTIVESOFTHESTUDY

- TostudytheimplementationonHospitalinformationsystem.
- Toidentifythedegreeofservicequalityinthemissionaryhospital.
- ToidentifythevariouscomponentsofHospitalinformationsystem.

RESEARCHMETHODOLOGY

AnempiricalstudyofmissionaryhospitalinErnakulamdistrictOutofthesesamplesizeof6mission hospital selected through Delphi method.The data collection was done through aquestionnaire. A face to face set of data was collected manually for most responses. Datacollection was done by questions related to the implementation of HIS, degree of servicequalityandcomponentsofHIS.Thedatawerecollectedfromthe

- clinicalleadership,
- medicalstaffsupervisors,
- managementsupervisorsand
- medicaldoctors.

Mostpeopleusedtheinformationtechnologytoolsandqualityofhealthinformation)relatedtodifferentdepartmentsinpublicteachinghospitalsinErnakulam.Therespondentsbelongtoall hospital departments and include all types of medical doctors (MD) (specialist andresident). The population size of the six hospitals was assessed through interviews withhuman resources management specialists in six hospitals. The size of the population wasapproximately274betweenphysicians,medicaldepartmentheads,non-medicaldepartmenthead,andmedicalandnon-medicalsupervisors.Totalsamplesizeis260questionnairesthathavebeenconsidered,as14Outof274distributedformswereexcluded.Thissamplesizeofthecollectedquestionnaireswassufficientforresearchhypothesestesting.

DATAANALYSISANDINTERPRETATION

Table:1Hospitalnamesandhospitalparticipationpercent

NameoftheHospital	**NooftheRespondents**	**Percentage**
APVarkeymissionhospital	42	16
Lisihospital	98	38
Lourdeshospital	57	22
Littleflowerhospital	26	10
Sahrudayahospital	20	8
StThomashospital	17	6
Total	**260**	**100**

Majority(38%)oftherespondentsareinthePSmissionhospitalErnakulam.

ChartNo:1NameoftheHospital

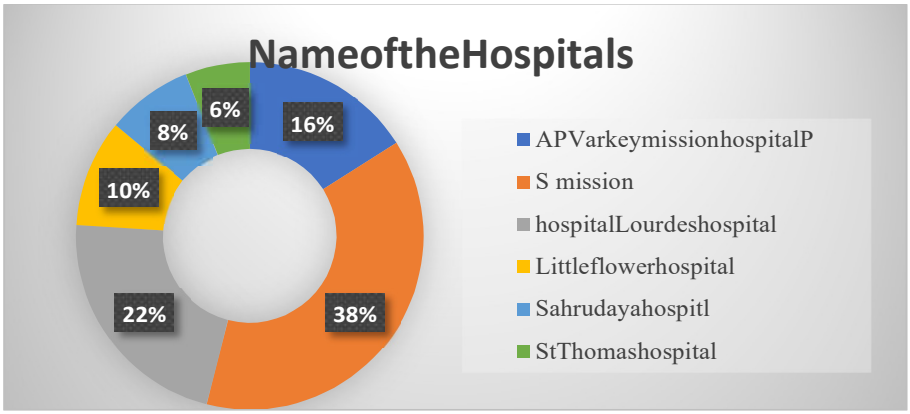


Table:2NameoftheProfessionsinHIS

Professions	**Noofrespondents**	**Percentage**
Manager	32	12
Seniorofficer	51	20
Supervisor	44	17
Headofmedicalunit	94	36
Residentdoctor	23	9
Specialistdoctor	16	6
Total	**260**	**100**

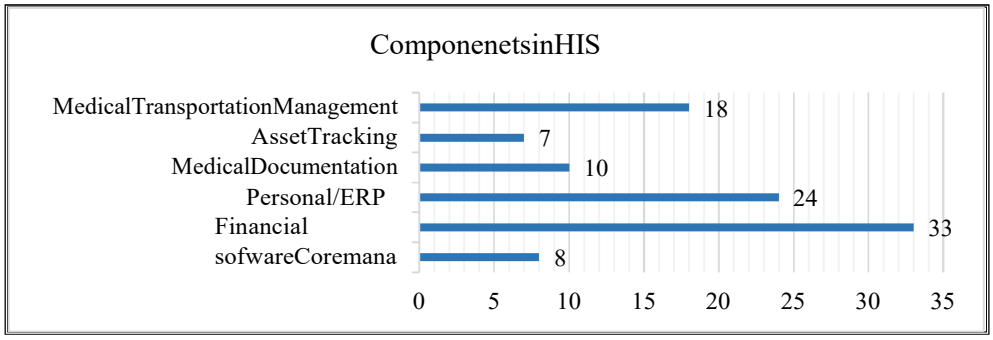
Majority(36%)oftherespondentsareintheHeadofmedicalunitinHIS.

Table:3ComponentsofHIS

Components	**Noofrespondents**	**Percentage**
Coremanagement	22	8
Financialsoftware	84	33
Personal/ERP	62	24
MedicalDocumentation	25	10
AssetTracking	19	7
MedicalTransportationManagement	48	18
Total	260	100

Majority(33%)oftherespondentsareintheFinancialsoftwarecomponentsinHIS

ChartNo:2ComponentsinHIS



CONCLUSION

In this research study on hospital information system in Ernakulam district taken on sixmission hospital with a sample size of 260 respondents on an empirical framework. TheResearch should include the development and investigation on HIS and implementation onHIS service quality. Majority Lisi hospital s ervice quality is high growth with response ofheadmedicalunitinHIS.Thecomponentsofhighlysatisfiedwithfinancialsoftwareserviceisexcellent inHIS inErnakulamdistrict.HIS havebecomeoneofthemostchallengingandpromisingfieldsofresearch,educationandpracticeformedicalinformatics,withsignificantbenefitstomedicineandhealthcareingeneral.Inadditionby usingHISinhospitaltheyhavehighlyimprovingservicequalityandsatisfactionofthedoctorsandpatients

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