8.1 Introduction

For the purpose of this study primary data was generated by administering a detailed questionnaire to healthcare and IT professionals on primary health service delivery. Such data is put to advanced statistical analysis for drawing conclusions. Detailed explanation has been provided in the previous chapters on healthcare and IT professionals’ opinion on public health service delivery management. This chapter throws lights on the major findings of the research study. It also deals with conclusions, suggestions and scope for future research.

This study is related to service delivery that embraces the ICT acceptance, efficiency and effectiveness and its linkages among delivery management. Healthcare and IT professionals’ expectations and perceptions are evaluated in terms of ICT dimensions like acceptance, efficiency and effectiveness of the service delivery.

From the data obtained through interviews and data collected and analyzed from the available records it is evident that the impact of IT solution to healthcare is very crucial. Security and reliable data are key elements are very important, things like unique user ID, data backup, error free diagnostic testing and setting up a datacenter are important as per analysis. Usage of technologies and maintaining the digital medical records score high ratings among other category of elements in implementation of IT solution in healthcare.

8.2 Summary of the Main Findings

The study has made an attempt to evaluate the service delivery in public healthcare sector. This has been done to provide guidelines for the future course of action to be followed for improving service delivery based on ICT dimensions such as acceptance, efficiency and effectiveness.

8.2.1 General findings:

From the data gathered through interviews and structured questionnaire, it’s evident that the information technology played a pivotal role in the efficiency of the hospital management.
1. Studies from developed countries demonstrate that an orientation towards a specialist based system enforces inequity in access. Health systems in low income countries with a strong primary care orientation tend to be more pro-poor, equitable and accessible. At the operational level, the majority of studies comparing services that could be delivered as either primary health care or specialist services show that using primary care physicians reduces costs, and increases patient satisfaction with no adverse effects on quality of care or patient outcomes.

2. The Healthcare service providers are attempting to deliver more effective care and also to deliver care that is safe. Quality of care is another important driver for ICT adoption. Both goals require the use of ICT to measure, monitor and report on quality improvement initiatives, as well as the use of information systems such as pharmaceutical ordering systems that are proven to reduce errors.

3. The Health Information Technology (HIT) systems can help ensure that physicians and other health care professionals have the most current information about the condition they are treating. HIT systems improve quality of care by avoiding duplication and medical errors. Because many patients receive care from multiple health care providers, HIT works to ensure efficient, coordinated, and secure information exchange.

4. Public Private Partnership does not necessarily imply the use of private finance. Publicly financed health authorities can contract with private or non-profit organizations to provide health care services. The key question is whether these partnerships are able to meet the goal of providing affordable and quality healthcare with the amount of resources or inputs available. There are numerous input and output factors that can influence the efficiency of these partnerships. Out of these factors which are crucial and important for maintaining a good efficiency level is not known.

5. The Self Service Technology (SST) introduction in healthcare sector resulted in health diagnosis which has evolved to reduce costs and improve quality. The Technology Acceptance Model (TAM) for users, described according to the Technology Readiness Index (TRI) as pioneers, has a very good ability to
predict future behavioral intent. TAM has an excellent capability to predict future behavioral intent of this new application in this new context, i.e. health care services.

6. The preventive and public health action has seen a key thrust in PHC approach which was implemented. No system exists for purposeful community focused public information or seasonal alerts or advisories or community health information to be circulated among doctors in both private practice and in public sector. PHCs were meant to be local epidemiological information centers which could develop simple community.

7. The Government of India initiated to provide the accessible healthcare services to all the rural areas and this initiative is termed as NRHM - National Rural Health Mission and was launched in 2005. This agenda involved building infrastructure and healthcare staff with a female accredited social health activist (ASHA) in every village. NRHM has significantly reduced the incidences of several diseases by increasing the number of health facilities (primary health centres and hospitals), care providers (ASHAs, doctors, nurses and paramedic staff) and community education.

8. The care providers are the medical experts, para-medical staff and the health workers who collect data in the field. The medical experts see any technology as intrusive unless it is directly in the diagnostic category where acceptance levels are higher. Equally importantly, the IT professionals who implement these solutions do not have any domain knowledge and hence cannot adequately meet the user requirements and expectations. These problems can be addressed through an inter-disciplinary approach in which medical experts are involved in the design of a solution along with the IT team, and subsequently in its testing and validation through controlled pilot trials.

9. The nature of healthcare study is complex in nature and provides a variety of opportunities for future research. Related factors include time required to document, loss of data granularity collected in patient records, and the need for sufficient training, hardware and technical support. Post implementation usability
studies could be conducted to gain a better understanding of the ICT’s overall impact on the healthcare professional’s workflow and productivity.

10. Healthcare Professionals has been evaluated with their skills, competencies, need and the awareness of technologies being used in public health service delivery management. Healthcare professionals should educate key stakeholders about the ICT’s long term benefits for continuity of patient care, medical research and health planning. Healthcare service delivery was analyzed with ICT dimensions such as acceptance, efficiency and effectiveness. Service delivery mechanism has been explored with need and awareness dimensions of ICT. Social entrepreneurial ventures being setup based on public health service delivery management.

11. The overwhelming need for flexible, customizable products is need of the hour in today’s healthcare industry. The commercial ICT system development is still quite immature and often healthcare vendors welcome input from the user community. Health Information Management and information technology (IT) practitioners, in conjunction with medical staff leaders, should recommend hardware and software functionality to developers based upon workflow requirements and user needs. Practitioners can assist physicians in the selection or design of user interfaces to improve ease of use. They should advise developers on the need for diverse modes of data entry and flexible documentation tools.

8.2.2 The Main Findings on Healthcare Professionals:

1. Males constituted the majority of the sample at 61%. Females constituted the remaining 39% of the sample. The respondents from the age group of 30-39 years constituted the single largest category of respondents at 43%. The respondents from the age groups of 40-49 years and 20-29 years constituted 25% and 17%, respectively, of the sample. The respondents from the age group of more than 50 years constituted the remaining 16% of the sample.

2. The single largest category of the respondents (at 36%) was diploma holders. The degree holders and SSLC holders constituted 31% and 13%, respectively, of the sample. Post graduates and PUC respondents constituted 12% and 8%, respectively, of the sample. Almost half of the respondents (48%) stated that they
are learners in ICT experience. Those stating themselves as specialists and experts constituted 24% and 9%, respectively, of the sample. The remaining 19% stated that they don’t know about their computer experience.

3. The single largest category of the respondents (at 27%) was physicians. ANMs and HW constituted 15% and 13%, respectively, of the sample while nursing staff and lab staff constituted 11% and 10%, respectively, of the sample. Private physicians constituted 7% of the sample while pharmacists, computer staff and admin staff constituted 6% each of the samples. Respondents from THOs constituted the single largest category of the sample (at 24%). Those from DHOs and PHCs constituted 23% and 22%, respectively, of the sample. Those from SCs and CHCs constituted 12% and 11%, respectively, of the sample. Those from private clinics, PPPs and PHIs constituted 4%, 3%, and 2%, respectively, of the sample.

4. The respondents from zone 4 constituted the single largest category of the respondents (at 37%). Those from zone 3, zone 1 and zone 2 constituted 33%, 13% and 17%, respectively, of the sample.

5. The female respondents gave Need a mean score of 2.90 while the male respondents gave it a mean score of 3.21. An analysis brings out that the F-value is 5.849 and significance is 0.016. Since the significance value is less than 0.05, the mean difference existing for Need across the genders is significant at 5% level. The respondents from the age group of 20-29 years gave Need a mean score of 3.50 while those from the age group of 30 to 39 years gave it a mean score of 3.21. The respondents from the age groups of 40 to 49 years and above 50 years gave Need mean scores of 3.00 and 2.49, respectively. An analysis brings out that the F-value is 8.613 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for Need across the various age groups are significant at 5% level.

6. The degree holders gave need a mean score of 3.24 while the diploma holders and post graduates gave it mean scores of 3.24 and 3.54, respectively. The PUC and SSLC respondents gave it mean scores of 3.17 and 1.84, respectively. An analysis brings out that the F-value is 18.520 and significance is 0.000. Since the
significance value is less than 0.05, the mean differences existing for need across the qualifications are significant at 5% level. The expert respondents gave Need a mean score of 3.76 while the learners gave it a mean score of 3.22. The specialist respondents and those who didn’t knew their computer experience status gave it mean scores of 3.56 and 1.85, respectively. An analysis brings out that the F-value is 46.781 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for Need across the levels of computer experience are significant at 5% level.

7. The admin respondents gave Need a mean score of 3.45 while the HW/ANM respondents gave it a mean score of 2.58. The paramedical and physician respondents gave it mean scores of 3.30 and 3.22, respectively. An analysis brings out that the F-value is 9.807 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for Need across the occupation levels are significant at 5% level.

8. The respondents from zone 1 gave need a mean score of 4.34 while those from zones 2 and 3 gave it mean scores of 3.73 and 2.88, respectively. The respondents from zone 4 gave it mean a score of 2.57. An analysis brings out that the F-value is 42.914 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for need across the zones are significant at 5% level.

9. The female respondents gave awareness mean score of 2.25 while the male respondents gave it a mean score of 2.42. An analysis brings out that the F-value is 5.461 and significance is 0.020. Since the significance value is less than 0.05, the mean difference existing for awareness across the genders is significant at 5% level. The respondents from the age group of 20-29 years gave Awareness a mean score of 2.56 while those from the age group of 30 to 30 years gave it a mean score of 2.41. The respondents from the age groups of 40 to 49 years and above 50 years gave Awareness scores of 2.31 and 2.07, respectively. An analysis brings out that the F-value is 5.740 and significance is 0.001. Since the significance value is less than 0.05, the mean differences existing for Awareness across the various age groups are significant at 5% level.
10. The degree holders gave awareness a mean score of 2.39 while the diploma holders and post graduates gave it mean scores of 2.44 and 2.60, respectively. The PUC and SSLC respondents gave it mean scores of 2.45 and 1.76, respectively. An analysis brings out that the F-value is 12.260 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for awareness across the qualifications are significant at 5% level. The expert respondents gave awareness a mean score of 2.69 while the learners gave it a mean score of 2.41. The specialist respondents and those who didn’t knew their computer experience status gave it mean scores of 2.60 and 1.73, respectively. An analysis brings out that the F-value is 32.923 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for awareness across the levels of computer experience are significant at 5% level.

11. The admin respondents gave awareness a mean score of 2.57 while the HW/ANM respondents gave it a mean score of 2.07. The paramedical and physician respondents gave it mean scores of 2.46 and 2.43 respectively. An analysis brings out that the F-value is 9.098 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for awareness across the occupation levels are significant at 5% level.

12. The respondents from zone 1 gave awareness a mean score of 2.88 while those from zones 2 and 3 gave it mean scores of 2.42 and 2.78, respectively. The respondents from zone 4 gave it a mean score of 1.79. An analysis brings out that the F-value is 100.404 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for awareness across the zones are significant at 5% level.

13. The female respondents gave acceptability mean score of 2.61 while the male respondents gave it a mean score of 2.95. An analysis brings out that the F-value is 6.429 and significance is 0.012. Since the significance value is less than 0.05, the mean difference existing for acceptability across the genders is significant at 5% level.

14. The respondents from the age group of 20-29 years gave Acceptability a mean score of 3.22 while those from the age group of 30 to 30 years gave it a mean
score of 2.97. The respondents from the age groups of 40 to 49 years and above 50 years gave Acceptability scores of 2.70 and 2.20, respectively. An analysis brings out that the F-value is 8.455 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for Acceptability across the various age groups are significant at 5% level.

15. The degree holders gave acceptability a mean score of 3.00 while the diploma holders and post graduates gave it mean scores of 2.93 and 3.38 respectively. The PUC and SSLC respondents gave it mean scores of 2.92 and 1.51, respectively. An analysis brings out that the F-value is 19.499 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for acceptability across the qualifications are significant at 5% level.

16. The expert respondents gave acceptability a mean score of 3.69 while the learners gave it a mean score of 2.94 The specialist respondents and those who didn’t knew their computer experience status gave it mean scores of 3.27 and 1.52, respectively. An analysis brings out that the F-value is 49.534 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for acceptability across the levels of computer experience are significant at 5% level.

17. The admin respondents gave acceptability a mean score of 3.07 while the HW/ANM respondents gave it a mean score of 2.26. The paramedical and physician respondents gave it mean scores of 3.04 and 3.02 respectively. An analysis brings out that the F-value is 10.275 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for acceptability across the occupation levels are significant at 5% level.

18. The respondents from zone 1 gave acceptability a mean score of 4.09 while those from zones 2 and 3 gave it mean scores of 3.59 and 2.60, respectively. The respondents from zone 4 gave it mean a score of 2.24. An analysis brings out that the F-value is 47.745 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for acceptability across the zones are significant at 5% level.
19. The female respondents gave efficiency mean score of 2.53 while the male respondents gave it a mean score of 2.69. An analysis brings out that the F-value is 3.340 and significance is 0.068. Since the significance value is more than 0.05, the mean difference existing for efficiency across the genders is not significant at 5% level.

20. The respondents from the age group of 20-29 years gave Efficiency a mean score of 2.91 while those from the age group of 30 to 30 years gave it a mean score of 2.68. The respondents from the age groups of 40 to 49 years and above 50 years gave Efficiency scores of 2.58 and 2.27, respectively. An analysis brings out that the F-value is 6.702 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for Efficiency across the various age groups are significant at 5% level.

21. The degree holders gave efficiency a mean score of 2.67 while the diploma holders and post graduates gave it mean scores of 2.73 and 2.96 respectively. The PUC and SSLC respondents gave it mean scores of 2.65 and 1.92, respectively. An analysis brings out that the F-value is 12.364 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for efficiency across the qualifications are significant at 5% level.

22. The expert respondents gave efficiency a mean score of 3.03 while the learners gave it a mean score of 2.67 The specialist respondents and those who didn’t knew their computer experience status gave it mean scores of 2.95 and 1.90, respectively. An analysis brings out that the F-value is 32.106 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for efficiency across the levels of computer experience are significant at 5% level.

23. The admin respondents gave efficiency a mean score of 2.94 while the HW/ANM respondents gave it a mean score of 2.29. The paramedical and physician respondents gave it mean scores of 2.77 and 2.68 respectively. An analysis brings out that the F-value is 9.376 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for efficiency across the occupation levels are significant at 5% level.
24. The respondents from zone 1 gave efficiency a mean score of 3.53 while those from zones 2 and 3 gave it mean scores of 2.92 and 2.82, respectively. The respondents from zone 4 gave it mean a score of 2.03. An analysis brings out that the F-value is 72.047 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for efficiency across the zones are significant at 5% level.

25. The female respondents gave effectiveness mean score of 2.70 while the male respondents gave it a mean score of 2.94. An analysis brings out that the F-value is 7.480 and significance is 0.007. Since the significance value is less than 0.05, the mean difference existing for effectiveness across the genders is significant at 5% level.

26. The respondents from the age group of 20-29 years gave Effectiveness a mean score of 3.11 while those from the age group of 30 to 30 years gave it a mean score of 2.91. The respondents from the age groups of 40 to 49 years and above 50 years gave Effectiveness scores of 2.80 and 2.46, respectively. An analysis brings out that the F-value is 7.055 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for Effectiveness across the various age groups are significant at 5% level.

27. The degree holders gave effectiveness a mean score of 2.92 while both the diploma holders and post graduates gave it mean score of 2.99 each. The PUC and SSLC respondents gave it mean scores of 3.00 and 2.01, respectively. An analysis brings out that the F-value is 16.150 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for effectiveness across the qualifications are significant at 5% level.

28. The expert respondents gave effectiveness a mean score of 3.08 while the learners gave it a mean score of 2.98 The specialist respondents and those who didn’t know their computer experience status gave it mean scores of 3.16 and 2.00, respectively. An analysis brings out that the F-value is 41.766 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for effectiveness across the levels of computer experience are significant at 5% level.
29. The admin respondents gave effectiveness a mean score of 3.18 while the HW/ANM respondents gave it a mean score of 2.52. The paramedical and physician respondents gave it mean scores of 2.97 and 2.90 respectively. An analysis brings out that the F-value is 9.016 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for effectiveness across the occupation levels are significant at 5% level.

30. The respondents from zone 1 gave effectiveness a mean score of 3.39 while those from zones 2 and 3 gave it mean scores of 2.88 and 3.12, respectively. The respondents from zone 4 gave it mean a score of 2.41. An analysis brings out that the F-value is 28.859 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for effectiveness across the zones are significant at 5% level.

8.2.3 The Main Findings on IT Professionals:

1. Males constituted the vast majority (at 88.3%) of the sample. Females constituted the remaining 11.7% of the sample. The respondents aged between 26 and 30 years constituted the largest category (at 33.3%) of the sample. Those aged above 40 years and between 31 to 39 years constituted 25% and 21.7%, respectively, of the sample. The respondents aged between 20 and 25 years constituted the remaining 20.0% of the sample.

2. The degree holders constituted the single largest category (at 35.0%) of the sample. This was followed by diploma and certificate holders which constituted 23.3% and 21.7%, respectively, of the sample. The post graduates constituted the remaining 20% of the sample. The respondents having work experience of 4-9 years constituted the largest category (at 33.3%) of the sample. Those having experience of more than 15 years and 10-15 years constituted 25% and 21.7%, respectively, of the sample. Those with experience of 1-3 years constituted the remaining 20.0% of the sample.

3. The marketers constituted the largest category (at 20%) of the sample. Managers constituted 16.7% of the sample while reviewers and developers constituted 16.7%, respectively, of the sample. Testers constituted 15.0% of the sample while the researchers constituted the remaining 13.3% of the sample. In consolidated
format, Developers/Managers/Testers constituted the majority (at 66.7%) of the sample, followed by marketers at 20% and researchers at 13.3%.

4. The female respondents gave need a mean score of 3.88 while the male respondents gave it a mean score of 3.38. An analysis brings out that the F-value is 2.907 and significance is 0.094. Since the significance value is more than 0.05, the mean difference existing for need across the genders is not significant at 5% level.

5. The respondents from the age group of 20-25 years gave need a mean score of 3.33 while those from the age group of 26 to 30 years gave it a mean score of 3.45. The respondents from the age groups of 31 to 39 years and above 40 years gave need mean scores of 3.65 and 3.32, respectively. An analysis brings out that the F-value is 0.558 and significance is 0.645. Since the significance value is more than 0.05, the mean differences existing for need across the various age groups are not significant at 5% level.

6. The certificate holders gave need a mean score of 3.04 while the degree and diploma holders gave it mean scores of 3.50 and 3.61, respectively. The post graduates gave it a mean score of 3.57. An analysis brings out that the F-value is 1.738 and significance is 0.170. Since the significance value is more than 0.05, the mean differences existing for need across the qualifications are not significant at 5% level.

7. The respondents with the experience level of 1-3 years gave need a mean score of 3.33 while those with an experience of 4-9 years gave it a mean score of 3.45. The respondents with the experience of 10-15 years and more than 15 years gave need mean scores of 3.65 and 3.32, respectively. An analysis brings out that the F-value is 0.558 and significance is 0.645. Since the significance value is more than 0.05, the mean differences existing for need across the various experience levels are not significant at 5% level.

8. The developers gave need a mean score of 4.23 while the managers and marketers gave it mean scores of 3.80 and 3.11, respectively. The researchers, reviewers and testers gave need mean scores of 3.73, 3.50 and 2.22, respectively. An analysis brings out that the F-value is 26.676 and significance is 0.000. Since the
significance value is less than 0.05, the mean differences existing for need across the designations (set 1) are significant at 5% level. The marketers gave need a mean score of 3.11 while the researchers and developers/managers/testers gave it mean scores of 3.73 and 3.48, respectively. An analysis brings out that the F-value is 1.901 and significance is 0.159. Since the significance value is more than 0.05, the mean differences existing for need across the designations (set 2) are not significant at 5% level.

9. The female respondents gave awareness a mean score of 3.70 while the male respondents gave it a mean score of 3.21. An analysis brings out that the F-value is 4.883 and significance is 0.031. Since the significance value is less than 0.05, the mean difference existing for awareness across the genders is significant at 5% level. The respondents from the age group of 20-25 years gave awareness a mean score of 3.36 while those from the age group of 26 to 30 years gave it a mean score of 3.34.

10. The respondents from the age groups of 31 to 39 years and above 40 years gave awareness mean scores of 3.28 and 3.08, respectively. An analysis brings out that the F-value is 0.737 and significance is 0.534. Since the significance value is more than 0.05, the mean differences existing for awareness across the various age groups are not significant at 5% level.

11. The certificate holders gave awareness a mean score of 3.41 while the degree and diploma holders gave it mean scores of 3.21 and 3.17, respectively. The post graduates gave it a mean score of 3.32. An analysis brings out that the F-value is 0.485 and significance is 0.694. Since the significance value is more than 0.05, the mean differences existing for awareness across the qualifications are not significant at 5% level.

12. The respondents with the experience level of 1-3 years gave awareness a mean score of 3.36 while those with an experience of 4-9 years gave it a mean score of 3.34. The respondents with the experience of 10-15 years and more than 15 years gave awareness mean scores of 3.28 and 3.08, respectively. An analysis brings out that the F-value is 0.737 and significance is 0.534. Since the significance value is
more than 0.05, the mean differences existing for awareness across the various experience levels are not significant at 5% level.

13. The developers gave awareness a mean score of 3.89 while the managers and marketers gave it mean scores of 2.74 and 2.82, respectively. The researchers, reviewers and testers gave awareness mean scores of 3.13, 3.63 and 3.52, respectively. An analysis brings out that the F-value is 14.943 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for awareness across the designations (set 1) are significant at 5% level.

14. The marketers gave awareness a mean score of 2.82 while the researchers and developers/managers/testers gave it mean scores of 3.13 and 3.43, respectively. An analysis brings out that the F-value is 6.369 and significance is 0.003. Since the significance value is less than 0.05, the mean differences existing for awareness across the designations (set 2) are significant at 5% level.

The some of the practical implications can be derived from this study. First, acceptance of ICT is found to be the most important factor in the public health service adoption and thus service providers should try their best to improve their service delivery in order to attract more consumers. Second, since social influence can positively affect user behavior, service providers should carry out certain promotion strategies to obtain early adopters and then expand the consumer scale through the social influence (e.g., word of mouth). Third, efficiency and effectiveness of ICT usage is perceived as two important factors influencing the impact of ICT in public health service delivery. For this reason service providers should adopt a user-centric service design method to ensure not only that the services can be easily learned and used, but also that service providers provide trainings for the potential consumers. Fourth, regarding the need and awareness of ICT usage in public health service delivery management has been carved out through innovative entrepreneurial approach, service providers should set an appropriate service price, one which would be accepted by potential users. This can be achieved through a marketing survey. Finally, as perceived vulnerability has significant impact on adoption intention, service providers should identify the target market by analyzing not only the threats that the services could reduce but also the people who are more likely to experience the threats.
8.2.4 Hypotheses testing:

The ANOVA results state that there is a highly significant difference among the components between the healthcare and IT professionals.

“ICT Acceptability level differs from one Healthcare Institution to other”.

The respondents from zone 1 gave acceptability a mean score of 4.09 while those from zones 2 and 3 gave it mean scores of 3.59 and 2.60, respectively. The respondents from zone 4 gave it mean a score of 2.24. An analysis of the above table brings out that the F-value is 47.745 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for acceptability across the zones are significant at 5% level. Hence null hypothesis is accepted and alternative hypothesis is rejected.

\( H_0: \) “ICT Acceptability level differs from one Healthcare Institution to other”.

\( H_a: \) “ICT Acceptability level doesn’t differ from one Healthcare Institution to other”.

“Effective usage of ICT increases the Efficiency in Healthcare Services”.

Regression analysis was used to find the effect of efficiency on effectiveness in healthcare professional services. It is seen from the tables that the correlation coefficient value (R) is 0.841 for Model2, which exhibits excellent amount of correlation between Efficiency and dependent variable (Effectiveness), with the F-ratio being 849.9 and its associated significance level being small (P<0.01). The R square value gives us the goodness of fit of the regression model. That is, the amount of variability explained by the whole of the selected predictor variables in the model for 70.7% (R2%=.707* x100) of variation in the dependent variable (Effectiveness). Since the significance value is less than 0.05, the mean differences existing for efficiency and effectiveness across the healthcare professional services are significant at 5% level. Hence null hypothesis is accepted and alternate hypothesis is rejected.

\( H_0: \) “Effective Usage of ICT Increases the Efficiency in Healthcare Services”.

\( H_a: \) “Effective Usage of ICT doesn’t Increase the Efficiency in Healthcare Services”.

“There is a positive relationship between Effectiveness and level of Acceptability in Healthcare Service Delivery”.

Regression analysis was used to find the effectiveness of healthcare service delivery which affects the level of acceptability of the ICT. It is seen from the tables that the correlation coefficient value (R) is 0.671 for Model1, which exhibits excellent amount of correlation between Effectiveness and dependent variable (Acceptability), with the F-ratio being 289.8 and its associated significance level being small (P<0.01). The R square value gives us the goodness of fit of the regression model. That is, the amount of variability explained by the whole of the selected predictor variables in the model for 45.1% (R2%=.451* x100) of variation in the dependent variable (Effectiveness). Since the significance value is less than 0.05, the mean differences existing for effectiveness and level of acceptability across the healthcare service delivery are significant at 5% level. Hence null hypothesis is accepted and alternative hypothesis is rejected.

H0: “There is a Positive Relationship between Effectiveness and level of Acceptability in Healthcare Service Delivery”.
Ha: “There is no Positive Relationship between Effectiveness and level of Acceptability in Healthcare Service Delivery”.

“There is a low level of Awareness about Technologies amongst Healthcare Professionals on ICT based applications

The admin respondents gave awareness a mean score of 2.57 while the HW/ANM respondents gave it a mean score of 2.07. The paramedical and physician respondents gave it mean scores of 2.46 and 2.43 respectively. An analysis brings out that the F-value is 9.098 and significance is 0.000. Since the significance value is less than 0.05, the mean differences existing for awareness across the occupation levels are significant at 5% level. Hence null hypothesis is accepted and alternative hypothesis is rejected.

H0: “There is a low level of Awareness about Technologies amongst Healthcare Professionals on ICT based applications”.
Ha: “There is no low level of Awareness about Technologies amongst Healthcare Professionals on ICT based applications”.

207
“There is a positive relationship between ICT application and Effectiveness in Healthcare Services”

Regression analysis was used to find the effect of need on effectiveness of healthcare services. It is seen from the tables that the correlation coefficient value (R) is 0.788 for Model1, which exhibits excellent amount of correlation between need and dependent variable (Effectiveness), with the F-ratio being 577.4 and its associated significance level being small (P<0.01). The R square value gives us the goodness of fit of the regression model. That is, the amount of variability explained by the whole of the selected predictor variables in the model for 62.1% (R2%=.621* x100) of variation in the dependent variable (Effectiveness). Since the significance value is less than 0.05, the mean differences existing for effectiveness and need across the healthcare service delivery are significant at 5% level. Hence null hypothesis is accepted and alternative hypothesis is rejected.

Ho: “There is a Positive Relationship between ICT application and Effectiveness in Healthcare Services”
Ha: “There is no Positive Relationship between ICT application and Effectiveness in Healthcare Services”.

“There is a lack of domain knowledge amongst IT Professionals on Healthcare Services”

The marketers gave awareness a mean score of 2.82 while the researchers and developers/managers/testers gave it mean scores of 3.13 and 3.43, respectively. An analysis brings out that the F-value is 6.369 and significance is 0.003. Since the significance value is less than 0.05, the mean differences existing for awareness across the designations (set 2) are significant at 5% level. Hence null hypothesis is accepted and alternative hypothesis is rejected.

Ho: “There is a lack of domain knowledge amongst IT Professionals on Healthcare Services”
Ha: “There is no lack of domain knowledge amongst IT Professionals on Healthcare Services”
8.3 Suggestions

In this section, an attempt is made to suggest suitable measures, on the basis of the findings (and also give direction for future research), for the improvement of public health management system in general and service delivery in particular.

1. Based on major findings of healthcare professionals, it’s evident that respondents who are more than 40 years and their low level of education are not in favor of using the ICT based applications in public health centers. Also respondents from zone 3 and 4 need lot of trainings and need to build awareness of ICT based delivery systems. The adoption of ICTs in healthcare information systems is achieved to improve and extend health care to remote and underserved areas and vulnerable populations. The ICT-based initiatives need to strengthen and expand its base in providing the proper medical and humanitarian assistance in disasters and emergencies. The Government has to promote collaborative efforts, planners, health professionals and other agencies along with the participation of international organizations for creating a reliable, timely, high quality and affordable health care and health information systems.

2. Healthcare service delivery was analyzed with ICT dimensions such as acceptance, efficiency and effectiveness. The acceptance level of ICT in zone 1 and 2 is very high compared to other zones. Service delivery mechanism has been explored with need and awareness dimensions of ICT. A healthcare professional has been evaluated through their general awareness amongst different public health centers in Karnataka. Healthcare Professionals has been evaluated with their skills, competencies, need and the awareness of technologies being used in public health service delivery management. Healthcare professionals should educate key stakeholders about the ICT’s long term benefits for continuity of patient care, medical research and health planning. Social entrepreneurial ventures being setup based on public health service delivery management.

3. Based on this study it’s found that an overwhelming need for flexible, customizable products. In general, commercial ICT system development is still
quite immature, and often healthcare vendors welcome input from the user community. Practitioners can assist physicians in the selection or design of user interfaces to improve ease of use. They should advise developers on the need for diverse modes of data entry and flexible documentation tools. Health Information Management and information technology (IT) practitioners, in conjunction with medical staff leaders, should recommend hardware and software functionality to developers based upon workflow requirements and user needs.

4. Health Information Management and IT professionals should engage physician participation in the planning and promotion of initial and ongoing user training programs. Respondents in this study not only desired flexibility in the usage of ICT, but also believed that the impact and the efficiency and effectiveness would help promote initial and sustained ICT acceptance. Health Information Management professionals are experienced in working closely with physicians and often serve as a liaison between IT and clinicians. These professionals can organize and provide user training sessions and also function as the “go to” contact for problem resolution.

5. The advent of wireless Internet access potentially allows the use of handheld communication devices, web-enabled telephones, interactive television, web and email terminals (WideRay and Satellife, 2003). The novelty and improved efficiency of new technologies may have the biggest effect on the acceptance of second-generation technologies in youth programs. There is a need to identify or develop methodologies for passing content from one medium to another. For example, from the Internet to community radio. Several organizations are modifying computer technology to make it more appropriate for rural areas. For example, the Simputer is being developed in India for rural low-literate populations (Harvey 2002).

6. The continuous medical training, education, and research through the use of ICTs, while respecting and protecting citizens’ right to privacy. Facilitate access to the world’s medical knowledge and locally-relevant content resources for strengthening public health research and prevention programmes and promoting women’s and men’s health. Launch pilot projects to design new forms of ICT-
based networking, linking education, training and research institutions between and among developed and developing countries and countries with economies in transition.

7. Shared development of care plans addressing physical and behavioral health care coordination and navigation support is especially needed to help beneficiaries’ access specialty, diagnostic and acute care services outside of the integrated primary care setting. Care coordination and navigation support is especially needed to help beneficiaries’ access specialty, diagnostic and acute care services outside of the integrated primary care setting. Sensitive and competent physical primary health providers with training and support to appropriately deliver medical care and change health behaviors. Standardized protocols and evidence-based guidelines that can be tailored to meet the needs of individual patients and set clear expectations for providers.

8. Joint and standardized clinical and performance measures, treatment follow-up, and feedback mechanisms that are shared among providers. Healthcare sector has seen a paradigm shift especially after the inclusion of ICT was thrown open to many social enterprises and the government agencies to think beyond what they used to do and also identify the malpractices to fix through the technology.
8.4 Conclusions

In recent years the healthcare sector in India is undergoing drastic changes. On account of severe competition from the private sector, the public sector is under severe stress and strain to perform better. The only way out to fight this change is to improve the service delivery. This will go a long way not only in developing the business but also in customer retention and checking the erosion market share of public sector healthcare provider. The following conclusions were drawn on the basis of this research study:

1. In this context, this study spells out the public health service delivery research has opened up lot of opportunities in improving the service delivery management system. The acceptability of ICT among healthcare professionals is found that zone 1 and 2 are higher compared to zone 3 and 4. Zone 1 and 2 are having low level poor and there is lot of scope for the improvement of technology interventions in public health services. Efficiency and effectiveness are the other two dimensions of ICT have been analyzed through this study and healthcare professional’s perceptions were strong in accepting this.

2. IT professionals are trying very hard to build awareness and analyze the data being leveraged in public health service delivery. Social entrepreneurial ventures being setup based on public health service delivery management. Among the various ICT service delivery dimensions in public healthcare sector, acceptability, efficiency and effectiveness play crucial roles, but awareness of technologies get least priority.

3. Individual characteristics, concerns over general and health information privacy and the perceived attributes of a community digital medical records system may well be the major factors in whether organizations, physicians, patients, and the general population will adopt and reinvent such systems.

4. The medical care and change health behaviors are sensitive and competent physical primary health providers with training and support to appropriately deliver. Alert, monitor and control the spread of communicable diseases, through the improvement of common information systems. Promote the development of
international standards for the exchange of health data, taking due account of privacy concerns.

5. A similar study might examine if differences exist in documentation practices throughout various patient care areas, such as, imaging, surgery, emergency department, intensive care units, labor and delivery, neonatal unit, etc.

6. In this study concerning consumer health technology acceptance behavior as both a technology acceptance behavior as well as a health behavior, we propose a unified model that integrates the technology acceptance theories and health behavior theories.

7. This study suggests that future research on health technology acceptance should consider the distinctions between professional and consumer health technology and take both the technology acceptance theories and the health behavior theories into account.
8.5 Proposed Model for Integrated Healthcare Service Delivery

Some of the observations based on the study and proposed a solution to healthcare service delivery management which is the integration of all the healthcare functions. Today, every department has the IT solution of their own requirement. For example, drugs and surgery units don't have the common platform. So, when the patient walks into the hospital till goes out, everything should have IT infrastructure to handle such requests and process it. The patient can able to get the bill and walks out without waiting for separate billings from each of the departments.

- Discover, monitor, analyze and secure the configurations of applications, storage, servers and networks with the Sun or IBM portfolio of best-of-breed security, resource management and information rights software and services.
- Minimize vulnerability to external infrastructure security breaches and eliminate the risks of access by internal staff members.
- Automate the security and IT auditing requirements including the application of user ID and password controls, audit trails and/or encryption.
- Avoid financial penalties and the associated negative perceptions that can result from a data breach, unintended data exposure or misuse.
- Document and maintain configuration standards across the information infrastructure to adhere to regulatory standards.
8.6 Scope for Future Research

1. The follow up study is to examine physicians’ perceptions on how well they think in capturing the data at the appropriate level. The healthcare systems results would be useful to EHR vendors to address the data entry challenges.

2. The confidential access to secure electronic networks is to deliver up-to-date records whenever and wherever the patient or clinician may need them. The personal health information should be made online, as well as reliable web-based health information for consumers.

3. At the point of care, the Electronic health records (EHRs) for patients are made available handheld devices.

4. The information best practices and treatment options can be made available through Decision support systems.

5. The convergence process between bio-sciences, healthcare and information technology is revolutionizing the discovery of new therapies and medical practice. Hence, a new concept is being created, "information-based medicine"