Challenges of implementing ICT in Health and Social Care in the UK- A case study managing the change at Haven Lodge care home in London

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Abstract

There have been many developments and implementations of ICT in health and social care centres of the UK that resulted in failures during 2000-2008 and in many cases the implementation of ICT in healthcare service organisations has boosted their efficiency, responsiveness and effectiveness in terms of taking effective decisions and for enhancing productivity.Since the implementation of ICT has resulted in more failures than its success, therefore many health and social centres of the UK are still carrying out their services in their traditional manner. This makes the required standard of many health and social centres much lower than the required national standard. Hence it creates a threat to the required services and quality therefore this project is intended to find and evaluate the major obstacles, which are associated with implementation of ICT.

Keywords: ICT, health and social care, developments and implementations

Introduction

Overview of Haven Lodge, UK

Haven Lodge has been involved in providing health and care services in many areas of the UK. It has created a brand image in providing high quality of care and services to all sects of people including individuals with Alzheimer's and other sorts of dementia.The service includes various personal care programmes and other intense care services provided at the patient's home. The programs usually focus more on providing services at home than at their locations (Archival reports of Haven Lodge, 2012). More than 500 staff and nurses including managers are working around all the centres of the UK. The Staff are also involved in acquiring feedback frequently with their patients including families and friends for the services provided. These feedbacks are then processed by them in making the required changes, so as to cope with expectation in need of the customers (Archival reports of Haven Lodge, 2012).

SIGNIFICANCE OF THIS PROJECT

The implementation of ICT has resulted in an increase in productivity in the majority of the organisations (Hawkins, 2005). As a result 67% of the private health and social care organisations in the UK are on the verge of implementing ICT systems but various challenges associated with the implementation have restricted them in implementing ICT in their activities and operations (UK Home care Association survey, 2010, 2011 & 2012). The above figure gives an indication that the issues are of primary concern because it has restricted many private health and social care organisations in implementing an ICT system. Therefore the project will find and explore those challenges and critically analyse its impact on the quality of services and business objectives. The findings from this project will help the owners and managers of privately owned healthcare facilities in the UK in identifying the main areas which can become a critical factor in terms of making a

successful implementation of ICT into their business models so as to provide quality services to their patients.

AIMS AND OBJECTIVES

Aim

The aim of this project is to critically analyse and evaluate the challenges of implementing ICT in a Health and Social Care organisation.

Objectives

1. To identify and critically analyse the challenges and issues which are associated with the implementation of ICT in Health and Social care.

2. To critically evaluate the impact of those issues on their services quality.

3. To make recommendations on change activities and strategies on how the home care centres can overcome the challenges during the implementation

LITERATURE REVIEW

Implementation of ICT is always a main concern for every health and social care sector for driving down the cost and on the same side improving the quality services to their patients. From the early 1980s, majority of the health care homes in the UK have integrated the use of ICT to enhance their services as well as increase their productivity. The integration of ICT in health care homes in the UK has radically changed the science of medical informatics and the practice of healthcare (Leonard &Winkelman 2004). To a further extent it has also helped the healthcare professionals in getting more availability and accessibility of information which supports their decision-making process (Blois & Shortliffe 2006). It is certain that the implementation of ICT in healthcare service organisations has boosted their efficiency, responsiveness and effectiveness in terms of taking effective decisions and for enhancing productivity. But on the other side it has also

been found that many health organisations in the UK have faced problems with the planning and implementation of appropriate ICT into their working model (Watson, 2007).

The carers of health and social care sectors in the UK agree to the fact that 50 to 90% of the responsibility for providing quality services belongs to them but the services and efforts can be enhanced further with the integration of ICT (Aneshensel et al., 1995; Gaugler et al., 1999; Pearlin, 1991; Skaff, and Pearlin 1995; Semple and Turner, 1989; Zarit, 2002). Many factors like cost of implementation, training & development, resistance to change, have restrained many care homes in the use of ICT. 4% of the private care homes have closed in the year 2010, 8% in 2011 and 10% in 2012 (UK Home care Association survey, 2010, 2011 & 2012). Carrying out manual services without the use of ICT has also resulted in an increase in hourly rates (UK Home care Association survey, 2010, 2011 & 2012). Hence, a serious concern needs to be addressed due to the fact that the use of ICT can enhance productivity as well as service quality.   (UK Home care Association survey, 2012).
Many projects running under the voluntary European quality framework of social services are undergoing research to find out the challenges and framing of a model by which ICT can be implemented into all their operations and activities associated with long-term care ('Voluntary European Quality Framework of Social Services, 2008).

Need for Integration of ICT in an Health & Social care sector

Aarts (2008) pointed five areas in which innovations are needed in a health and social care sector and in turn it can bring the following advantages which are highly needed among the health and social sectors in the UK.

The implementation in the form of innovation could be of two different types: (1) radical, when there is a deep and complete change in the idea itself of product or service and (2) incremental, when the product or service is lightly modified to meet new needs (Liebmann et al., 2003).

According to Watson, (2007), innovation is radical when it is viewed and implemented as an opportunity that results in the creation of a new product, service or a change to a

different one. An innovation can be an idea, practice, process or product perceived as new by an individual who then transforms a new problem-solving idea into an application. Innovations are thus "the outcome of the innovation process, which can be defined as the combined activities leading to new, marketable products and services and/or new production and delivery systems" (Burgelmann et al., 2006).

Regarding the incremental innovation, Sundbo (2010) states there is an adaptation of existing products or a new way of delivering products. According to Miller (1983) the innovation, and its promotion, can be pursued and obtained by different ways and means, commonly defined entrepreneurial strategies.

Information and Communication Technology in the Health and Social care sector

During the last decade suddenly many changes happened very fast and the ICT was an innovative and multitasking means for many care organizations (and not only) (Leonard &Winkelman 2004). All this leads to have a massive reduction of material cost (phone calls, faxes, paperwork), time and human resources (Kaino, 2005).Also, the social care employees can be more efficient and faster by having an easy and quickly access to the "World Wide Web" (WWW or Internet): detailed and updated information about the services offered. Every bit of information is displayed online and the service user has a more coherent and accurate communication (Sibiya, 2003).

There is no doubt that the implementation of ICT can bring efficiency in the operation of a health and social care sector but has limited its implementation due to the various challenges faced by the organisation in relation to the implementation of new ICT system (Blois &Shortliffe 2006).This sharing of information between the healthcare workers and the patients can be achieved only with the implementation of ICT system (Eason, 2010).

There is a need for the implementation of ICT in health and care sector in UK for enhancing the efficiency and hence this topic of implementation has become an interesting part of the researchers as well as for the project managers (Watson, 2007)

Implementation of technical system involves data, software and hardware whereas social technical implementation involves trained and selected users in making use of those technology (Sondergaard et al., 2003).
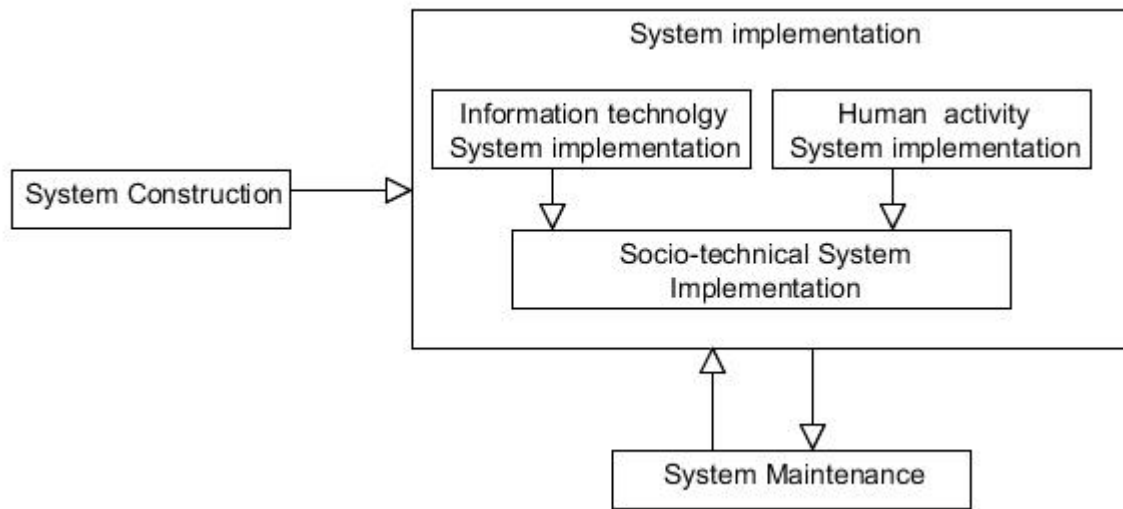

Figure 1: System Implementation (Sondergaard et al., 2003, p114)

Ways for system implementation

In relation to system implementation, there are three ways by which systems are implemented in the entire health and social care centres such as parallel conversion, direct conversion or big bang, pilot changeover (Davis, 2002).

Direct changeover

Direct conversion which is also known as big-bang implementation is a kind of approach undertaken by project managers for replacing all the old system with a new system in one go. This means that there is a complete transformation of the changes taking place in either one day or a week, where the users will be completely handed with the new systems in their next day of their operation. After the implementation, they are no use or presence of old system in that place (Hawkins, 2005). This type of changeover is taking place in small health and social care centres in the UK (Hawkins, 2005).

Pilot implementation

Pilot changeover is another approach of implementation for the project managers, in which the new system is applied in only one sector or in one department in order to check the successful implementation. This monitoring goes on for a number of months, till the project managers are satisfied as well as the users are satisfied with the use of new system. After this, the same system is applied to the entire department or in all the other locations of the organisation. This type of implementation has taken place in large health and social care centres in the UK (Hawkins, 2005).

Parallel implementation

This is done in order to reduce any risk with a complete changeover among the users. It is also done in order to provide the critical services to their customers with their old systems and at the same time making the customers as well as the users getting acquainted with the new system over a period of time (Hawkins, 2005). This transformation usually takes a small period of time for getting totally acquainted to the new system and after this the whole old systems are disabled and removed. This type of implementation is taking place in both small and large health and social care centres in UK (Hawkins, 2005).

System Implementation Phase

The different implementation phase which takes place in relation to complete changeover for carrying out the operations in a more digital manner in a health and social care centres are of six phase. In order to improve their quality services as well as to drive down their operation cost, the implementation phase should be in accordance to socio-technical approach. (Kaino, 2007)
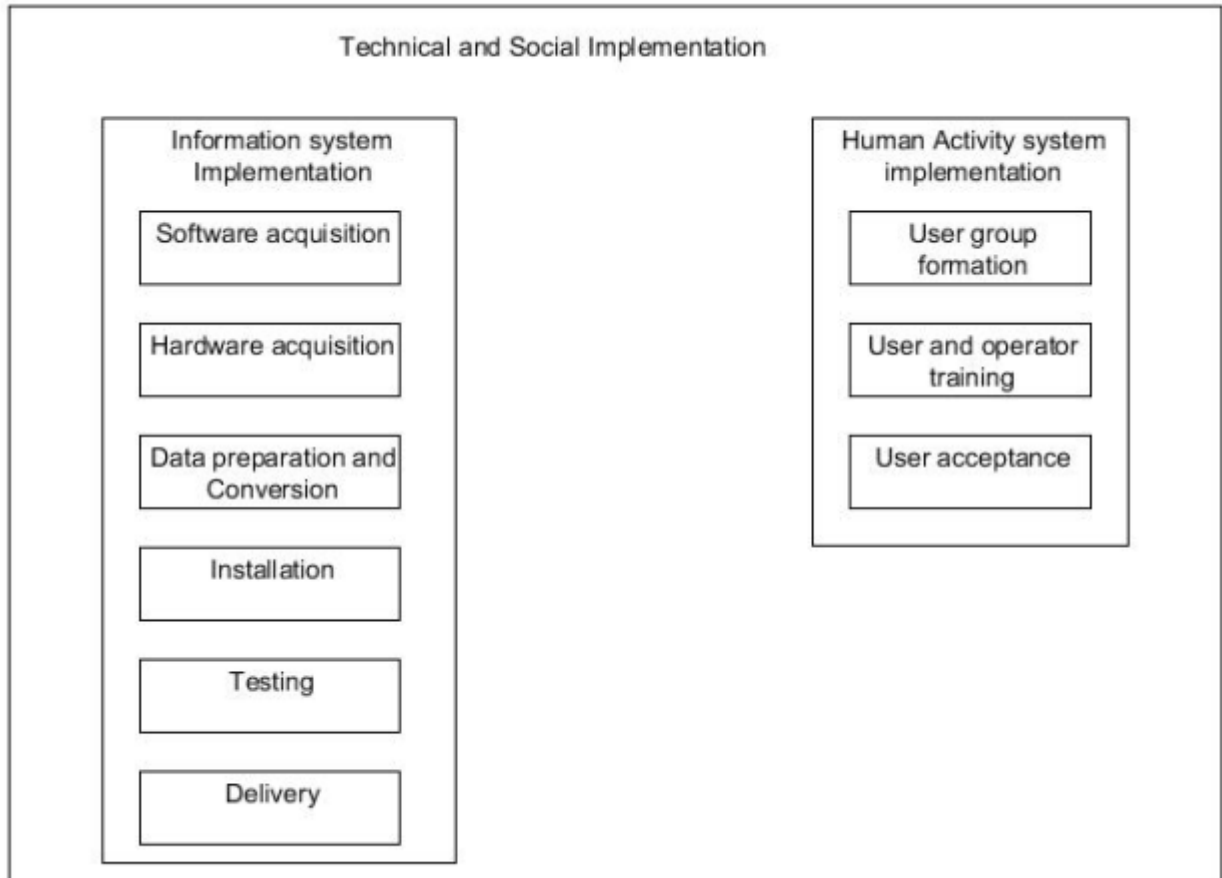
Figure 2: Social Implementation (Kaino, 2007, p. 374)

The different ways that are involved in the social technical implementation are as follow;

• Feasibility study

In this stage, project manager makes a feasibility study of the organisation in which the system need to be implemented. This generally involves all the stakeholders like users, customers, managers. Project managers involve these stakeholders to understand the requirement and to understand how the work needs to be designed and carried out with the new system. This stage is critical as this stage gives an outline of the whole development of the information systems that need to be implemented. (Kaino, 2007, p. 374)

• Hardware acquisition

This stage includes the purchasing of telecommunications equipment, peripheral devices, computers, etc. that need to be acquired for making and implementation in accordance to the feasibility study.   (Kaino, 2007, p. 374)

• Software acquisition

This stage involves taking decision on how the software needs to be designed or which software needs to be acquired from the market along with the decision on selecting the different database management systems for the concerned organisation. (Kaino, 2007, p. 375)

• Data preparation and conversion

Since every organisation works on manual data therefore the status need to be transformed and transported to the new system so as they can make use of the old system at the same time. Therefore this stage is referred to the methods and activities by which they can transfer the data from their old system to the new system. (Kaino, 2007, p. 375)

• Installation

This stage or phase refers to the actual installation of the defined hardware, software and other networking system. The state also refers to the activities associated with data conversion. This stage is also linked with the different implementation methods such as direct changeover, pilot and parallel changeover.   (Kaino, 2007, p. 375)

• Testing

After the implementation or actual installation, testing of the system is done in this phase to monitor the system on how effective it has been considered to carry out the work. This also involves the finding of errors and carrying out multiple test so as to make the system more stable for future. (Kaino, 2007, p. 376)

• Delivery

Once the testing stage is over, delivery stage takes place in which the project managers make the actual implementation of the well-defined system in the organisation for the real operations. In this stage, the new system is fully introduced into the new site and is deployed with the actual activities. (Kaino, 2007, p. 376)

• User group formation

This stage refers to the formation of user groups in which different people or users are assigned to be trained for making use of all particular kind of system in the organisation. Therefore this stage refers to the allotment of people and assigning tasks that need to be performed by them, while making use of the new system. (Kaino, 2007, p. 376).

• User and operator training

This stage refers to the actual training of the users after the implementation of the new system. Since socio-technical implementation is often related with the involvement of users, therefore training is an important stage for the organisation in understanding the new system as well as in making use of those systems in a more productive manner. Training can help the users in getting acquainted with the new systems so as they can make full use of the new systems in providing quality services as well as driving down their cost of operations. (Kaino, 2007, p. 376).

• User acceptance

The final stage of user acceptance is often critical for the organisation as failure due to the user acceptance can result in a great disaster for the organisation. This has also been a reason in earlier times for many failures and successes in business. (Kaino, 2007, p. 376).

Challenges in the implementation of ICT in a health and social care sector
Lack of national or global vision of the future

There is a huge demand for the integration of global e-health systems in all the health and social care centres of the UK in order to cope up with the required demand for maintaining quality and providing extensive support to the patients for 24/7. (Millennium Development Goals, 2008)

Various steps have been initiated by the government of the UK for implementing ICT and other technologic services to help the patients in providing preventive care programmes and in providing 24/7 support to the older people in homes. Although many health and social care centres are proceeding in making great changes within the health arena but still lack the strategic vision of the future (Kaino, 2007).

Lack of effective integration of e-health systems and pathways of care across health/social care,

The reason for this lack of effective integration of ICT and pathways of care across social/health care is due likely success of the implemented ICT programmes, sustainability and affordability. Another reason for the above problem is having difficulty in making an effective communication between the required visions with the planned strategic vision (Blois & Shortliffe 2006).Another problem associated with the lack of effective integration of e-health systems is its acceptability among the patients of different cultures (Sibiya, 2008).

Resistance to change among the nurses and other members of staff

Barnard, (2007) found that nurses and other staff of health and social care centres of UK are also concerned in losing de-individualisation in content design, critical thinking abilities and in making comprehensive care for the patients. Nurses and other staff are also concerned that the implementation of new technology can become too difficult in handling and might fail in giving the required services as expected (Lee, 2005)

Nurses and other staff of new generations are positioning themselves in a neutral place where recognition of the importance of the transformations are not taking into negative phase and believe that the implementation of ICT can modify the working environment, values, politics and practices (Winkelman, 2008)

Lack of 24/7 ICT support in the workplace, coupled with concerns about the reliability of ICT and Lack of access to appropriate hardware

One of the main challenges faced by the health and care sector is lack of creating 24 x 7 ICT support as this can result in a high expenditure at the start. Moreover lack of access to the appropriate hardware often results in large requirement for financial resources. Acquiring appropriate hardware and software of latest technologies often costs a high amount of finances for many health and social care sectors and in many cases it has resulted in poor performance. In many cases, health and care centres make use of minimum ICT systems in the workplace in order to minimise the cost of expense in the use of ICT. (Winkelman 2008)

Lack of education and training, coupled with worries of extra financial burden

The health and social care centres of the UK often come into the worries of having extra financial burden on implementing ICT system in their centre due to this particular reason they have to provide the necessary training and education to their staff in order to enhance their level of competency (Winkelman 2008). Moreover health Informatics curriculum has been removed from many education centres in the UK due to the downfall of educators and teachers which have limited knowledge on health informatics. Hence acquiring educators or trainers for training their staff has now become costly for the health and social care centres. (Hawkins, 2010).

Therefore the staff and the nurses need to be more technical toward the use of an ICT system. This would be also aware with payment systems, contracts, data protection and booking. For all these activities, education is required to understand the individual activity for which intense training is required and this in turn raises the overall cost for the implementation of ICT system (Winkelman 2008).

From the research done by Blois & Shortliffe 2010, it has been observed that limited time is provided from the trainers to the staff and nurses during the training sessions and hence on an average 15-20 min is given by the trainers in learning a single function of the ICT system. This limited time often leaves the staff lacking with professional touch and complete knowledge on the ICT system. Due to the insufficient training, it also results in lapses in professional accountability and legal issues, lack in understanding with the rules for sharing information and security of records. (Blois & Shortliffe 2010).

Lack of awareness of the security and Integrity issues.

Alpert (2008), after carrying out research on the privacy of e-records in various systems of health and social care centres in the UK, came to the conclusion that there is a need for true patient empowerment and therefore while designing or implementing the ICT system, all the stakeholders should be involved in the decision-making process so as to include this issue before the ICT project starts in the concerned health and social care centres of the UK (Willison et al. 2008).

It has also been accounted (Anderson, 2010) that staff and nurses of health and social care centres are more task oriented and are not used to delivering care to the large number of patients and in handling large volumes of information. Hence it can become a challenge for nurses and staff of health and social care centres in assessing large volumes of data for large numbers of patients in a short time. It may also result inadequacy in quality of services. (Anderson 2010).

Research Methodology

For this project, qualitative data was used to explore the different challenges associated with the implementation of ICT in a health and social care. Also the reason for using quantitative research was to quantify the responses obtained from the employees in a health and social care so as to correctly evaluate and could relate the link of the challenges faced in relation with the implementation of ICT in a health and social sector.Strategy of this project was a case study and survey from the employees of Haven Lodge (Health and Social Care, UK).

It is necessary for this project to understand the impact of the different challenges associated with the implementation of ICT in a health and social care, therefore is important to carry out survey for collecting the primary data by the means of a questionnaire session with the employees of haven Lodge, UK. The acquired primary data was used to cross examine the extent of impact of the various obstacles and challenges on the implementation of ICT in heaven Lodge, UK with the secondary data of case studies on similar research.

The method used for carrying out primary findings involving non-probability and probability techniques during the survey process is known as sampling (Saunders, 2009). Non probability sampling is defined as a sampling instrument where the survey is carried out with the pre-appointed respondents and does not involve random selection of the respondents whereas probability sampling is defined as the technique for carrying out

primary finding by making random selection of respondents which are directly related with the project (Saunders, 2009).

For this project, the findings were discussed by carrying out survey using the questionnaire session with pre-appointed respondents, which were the employees of haven Lodge and hence probability sampling will be used for this project.

To carry out the survey, the author used a sample size of 20. A questionnaire session will be made with the employees of heaven Lodge, UK.

The author has made use of Likert Scale to make it easier for the staffs and nurses (including managers) of Haven Lodge to answer their views in a more accurate form.

Pilot testing was done on the questionnaire in order to make a pre-test on the initial "Live-Test" which will help to find the issues before finalising the survey format and questions.

Questionnaire containing closed ended questions will be used to obtain primary data with the respondents which are employees of heaven Lodge, UK.

Ethical considerations

The author will be carrying out all the activities and finding from the employees of heaven Lodge, UK after taking permission from the managers as well as from the employees in order to comply with the ethical consideration. Secondly all the data obtained directly or indirectly from the employees of heaven Lodge will not be exposed for any personal gain and has been only used in this project. The author has expressed opinions and views to all the respondents (Staff and nurses including managers of Haven Lodge, UK) in relation to the information collected during the survey. The author has also made clear to all the respondents about the security and integrity of the data provided by them. It has also been stated that, all the important data will be deleted, once the project is completed. No names or identification of any respondents will be made in this project by the author, unless the individual has consented in writing.

Presentation and Analysis

The finding in this chapter has been categorised into part in which the first part contains the personal data of the respondents which is their gender, year of services and knowledge on IT. The next section contains the main project questions which have been framed in relation to the finding made in the secondary data.
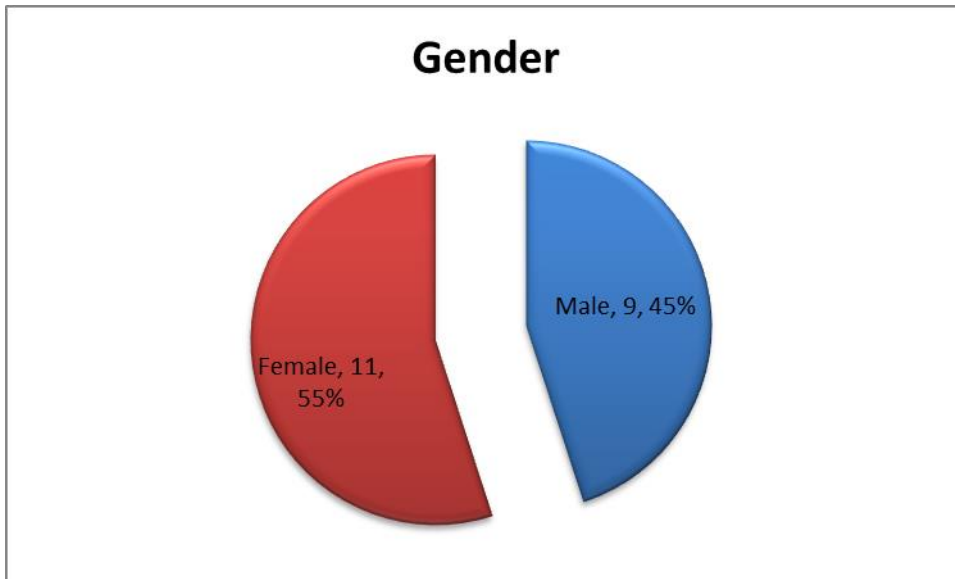
Section 1: Personal Data of Respondents

Figure 1: Gender distribution

Fig 1 shows that 55% of the respondents retrieved were female and 45% of the respondents were male and this indicates that a balanced survey was done. The reason for carrying out survey with the balanced number of gender is to assess the finding as a general and to prevent the categorising of the finding with respect to gender.
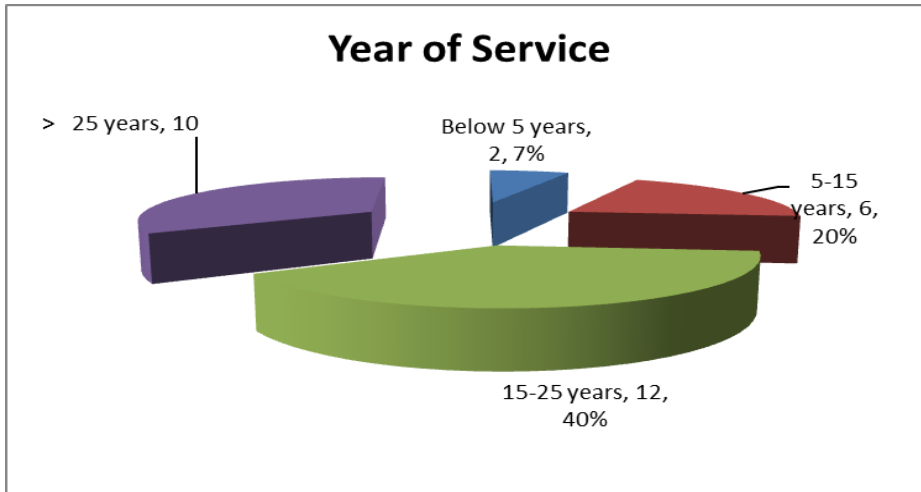
Respondent's Year's of Service

Figure 2: Respondent's year of services.

Fig 2 around 83% of the respondents or in their services for more than five years in which 73% of the respondents are having their services in the health and social care centres for more than 15 years, which clearly states that the respondents are totally acquainted with the working environment in a health and social care centre and therefore the findings obtained from these respondents will be more reliable.
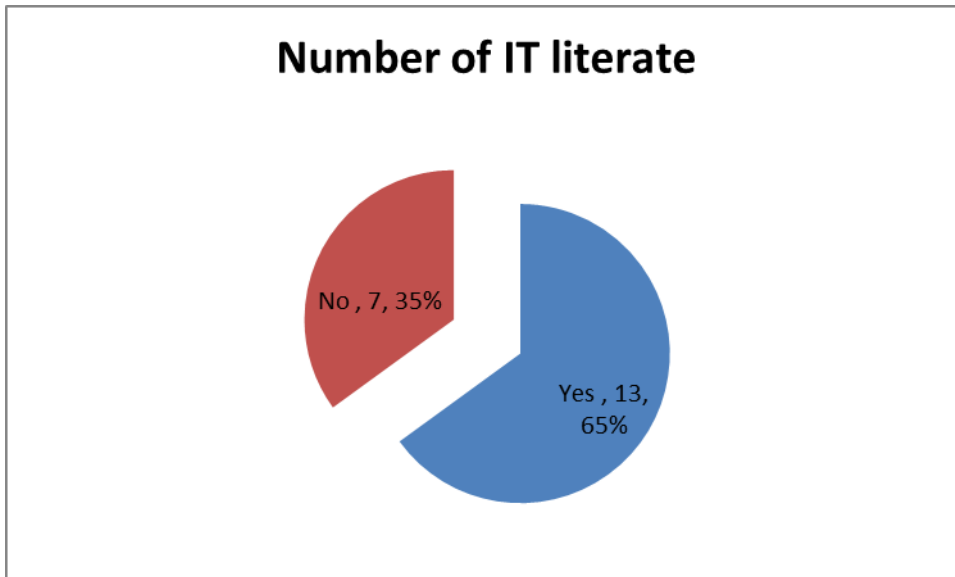
IT literate in Haven Lodge, UK

Figure 3: IT Literate in Haven Lodge, UK

Fig 3 shows that 65% of the respondents are having the knowledge on IT and they are aware of the information systems used in the health and social care centres. 35% of the respondents are not aware with any kind of IT systems. Overall Haven Lodge is having good number of IT literates which can be an advantage for that Centre because making the change with the implementation of ICT will have a higher probability of success. Moreover even with minimum training, the staff can get well acquainted with the new changes.

Section 2: Main Finding

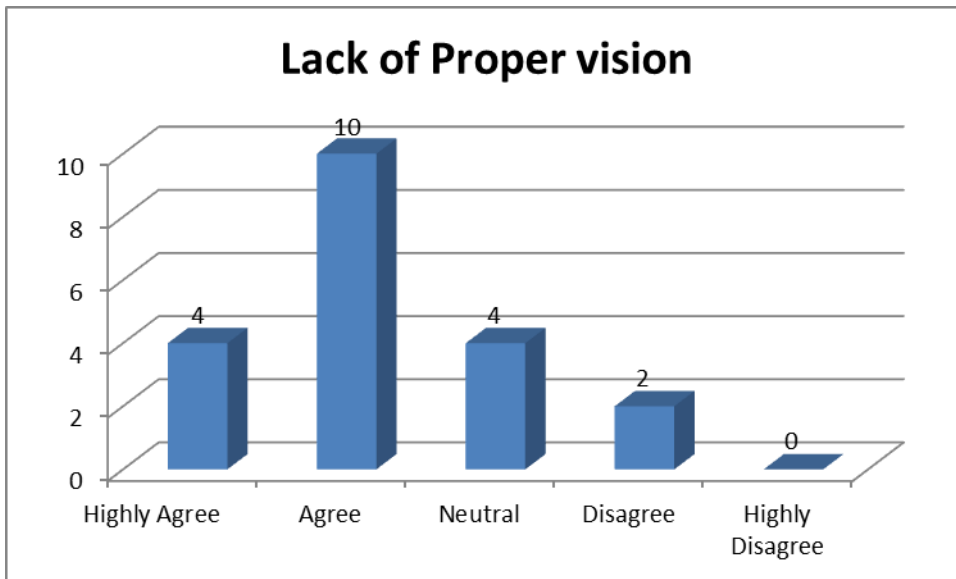**Issue 1: Lack of national or global vision of the future**

Figure 4: Lack of proper vision

Weighted mean score (Mean) = ∑fx/ ∑f

$$= 76/20$$

$$= 3.8$$

Analysis:

From the Fig 4, a mean score of 3.8 is obtained which lies very close to the scale of "agree" and this indicates that the majority (90%) of the staff and nurses of Haven Lodge believe that there is a lack of proper vision for their organisation and it indicates that there is a need

for a strategic change in order to cover the strategic gap with the required national standard of the UK.

To what extent do you think that the current environment needs the use of ICT?
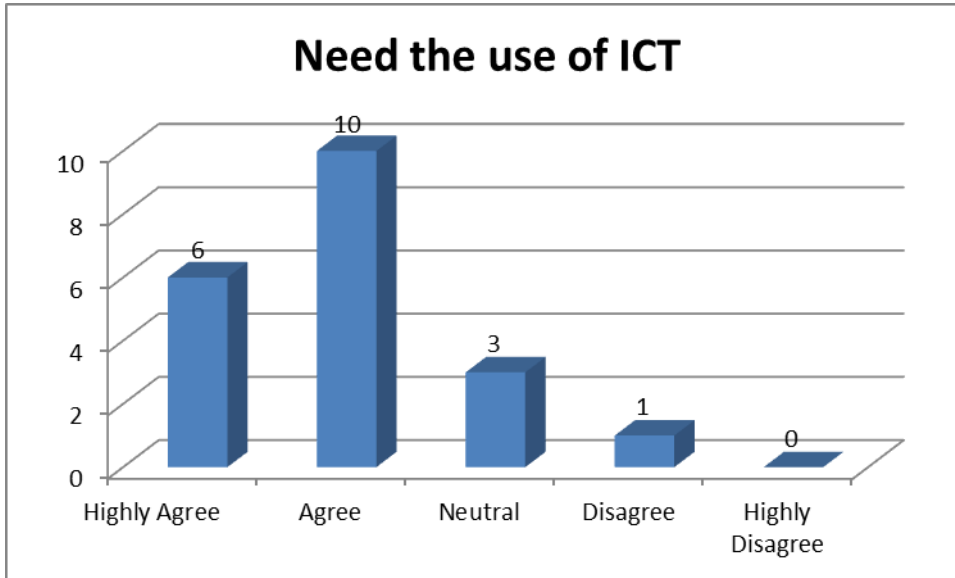

Figure 5: Need the use of ICT

Weighted mean score (Mean) = $\sum fx / \sum f$

$\qquad$ = 81/20

$\qquad$ = 4.05

Analysis:

From the Fig 5, a mean score of 4.05 is obtained which lies very close to the scale of "agree" and this indicates that the majority of the staff and nurses of Haven Lodge believe that there is a need for implementing information system in the form of ICT/e-health system in order to match/ cover the strategic gap with the required national standard. Staff and nurses of Haven Lodge are keen for the implementation of ICT as majority of the staff are IT literate.

To what extent do you think that your current working system lacks changes, while competing with the services imparted with other health and social centres?
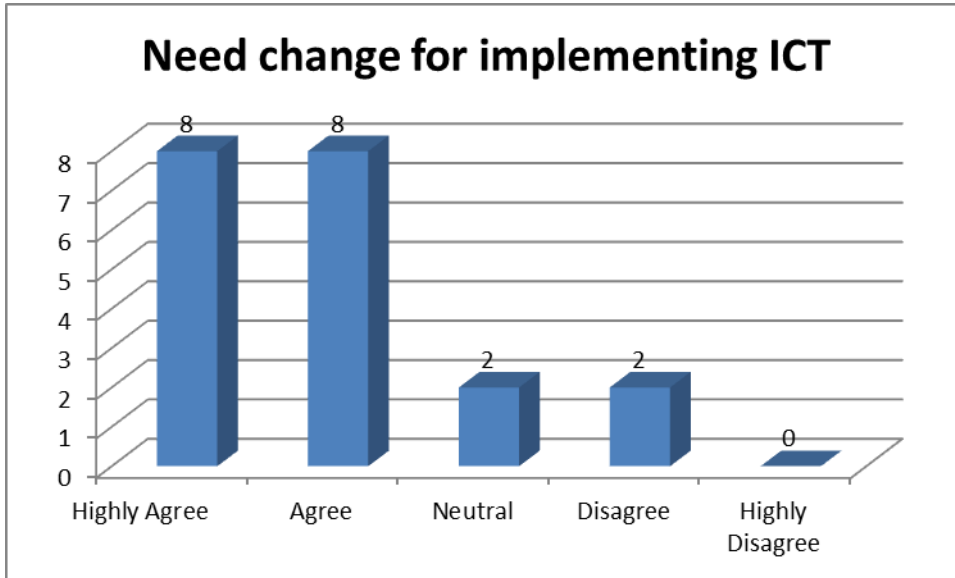
Figure 6: Need changes

Weighted mean score (Mean) = $\sum fx / \sum f$

$$= 82/20$$

$$= 4.1$$

Analysis:

From the fig 6, a mean score of 4.1 is obtained which lies very close to the scale of "agree" and this indicates that majority (90%) of the staff and nurses of Haven Lodge are aware that the current system is unable to compete with the required quality of services and therefore there is a need for making a change in the organisation with the implementation of ICT.

Issue 2: Lack of effective integration of e-health systems and pathways of care across health/social care

To what extent do you think that the use of ICT will enhance communication in your workplace and with your patients?
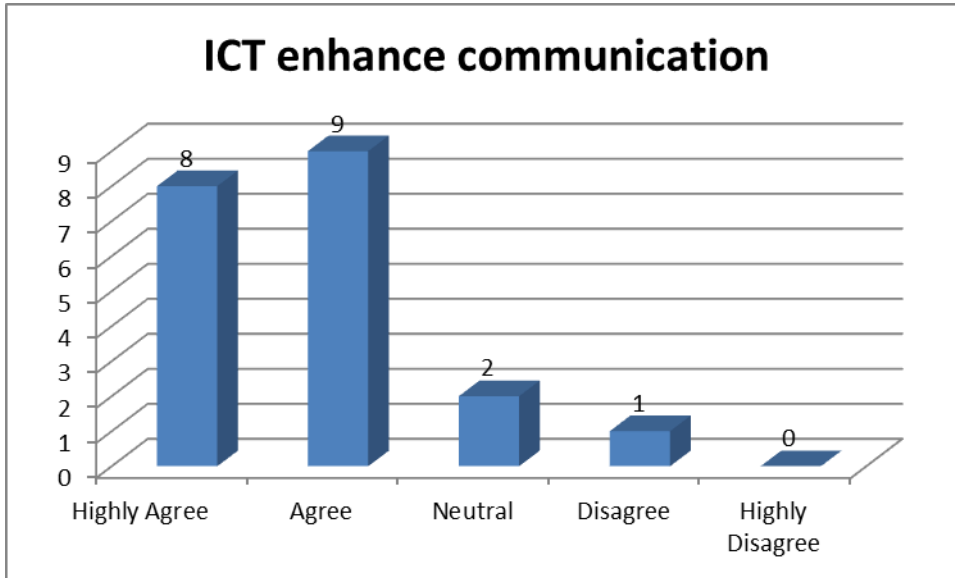
Figure 7: ICT enhance communication

Weighted mean score (Mean) = ∑fx/ ∑f

$$= 84/20$$

$$= 4.2$$

Analysis:

From the fig 7, a mean score of 4.2 is obtained which lies between the scale of "agree" and the scale of "Strongly agree" and this indicates that (95%) staff and nurses of Haven Lodge believe that the present workplace communication can be enhanced with the implementation of ICT. This will also enhance communication with their patients.

To what extent do you think the use of ICT can improve decision making process?
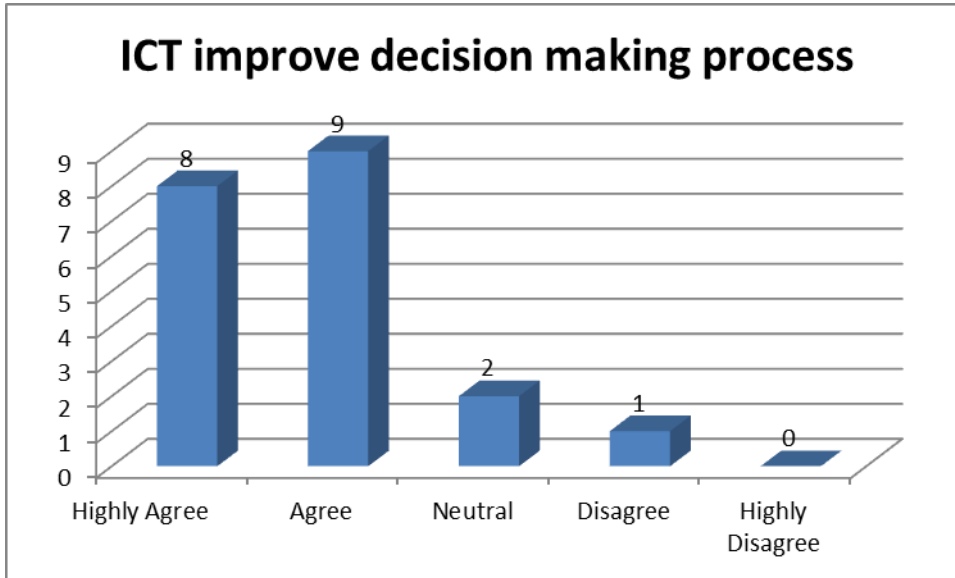
Figure 8: ICT improve decision making process

Weighted mean score (Mean) = $\sum fx / \sum f$

$= 84/20$

$= 4.2$

Analysis:

From the fig 8, a mean score of 4.2 is obtained which lies   between   the scale of "agree" and   the scale of "Strongly agree" and this indicates that (95%) staff and nurses of Haven Lodge do agree that the use of ICT system can improve the decision-making process. They are aware of the fact that the use of different information systems in the organisation can help to extract useful information in short time and therefore it can lead to effective decision-making processes which can lead to more productivity in the organisation.

To what extent do you think that the integration of ICT in the form of e-health systems can enhance the quality of services?
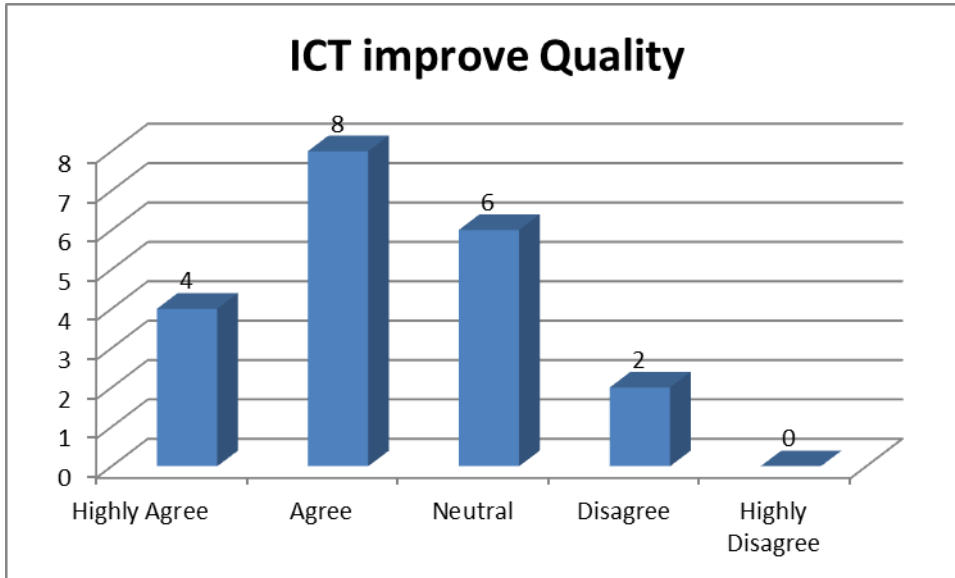
Figure 9: ICT enhance communication

Weighted mean score (Mean) = $\sum fx / \sum f$

$= 74/20$

$= 3.7$

Analysis:

From the fig 9, a mean score of 4.2 is obtained which lies between the scale of "agree" and the scale of "neutal" and this indicates that (90%) staff and nurses of Haven Lodge believe that the quality of service can be enhanced with the use of ICT system.

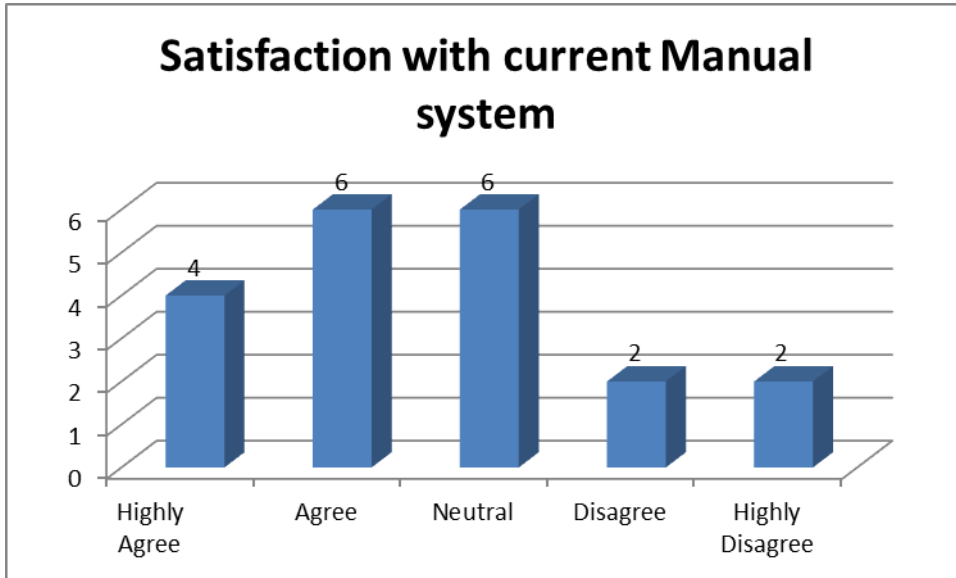**Issue 3: Resistance of change among the nurses and other members**

Figure 10: Satisfaction with current manual system

Weighted mean score (Mean) = $\sum fx / \sum f$

$$= 68/20$$

$$= 3.4$$

Analysis:

From the fig 10, a mean score of 3.4 is obtained which lies very close to the scale of "neutral" and this indicates that (80%) of the staff and nurses of Haven Lodge couldn't figure out the differences between the manual works and the advantages that can be gained with the new system. The reason for this is because some staff is unaware of the advantages with ICT. This indicates that motivation along with training and education should be imparted to the employees.

To what extent are you willing to adopt/accept new system?
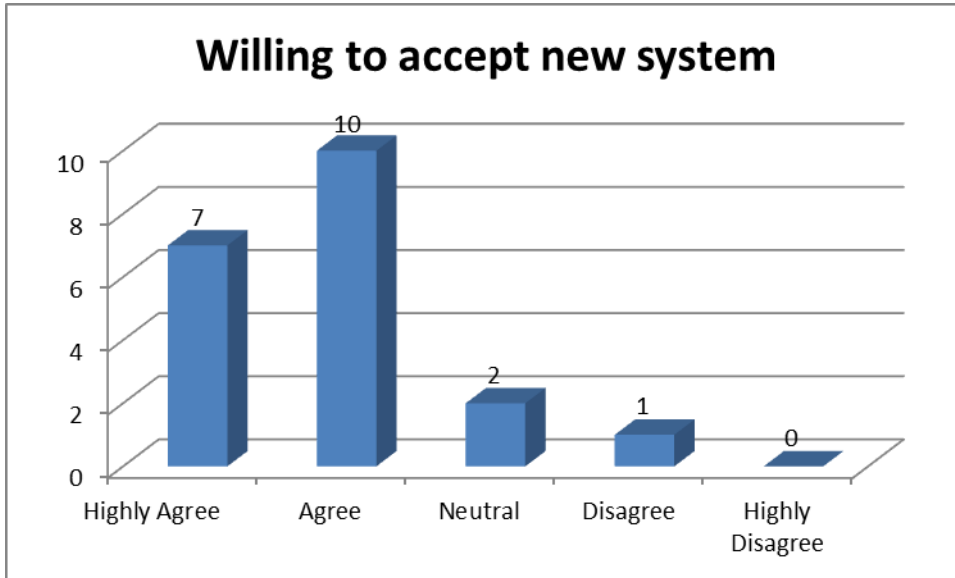
Figure 11: Willing to adopt new system

Weighted mean score (Mean) = $\sum fx / \sum f$

$$= 83/20$$

$$= 4.15$$

Analysis:

From the fig 11, a mean score of 4.15 is obtained which lies very close to the scale of "agree" and this indicates that (95%) staff and nurses of Haven Lodge are interested in accepting the new changes as some employees of the Haven Lodge are aware with the advantages of the implementation of ICT.

12 To what extent do you think that the integration of new system can be a threat to your job?
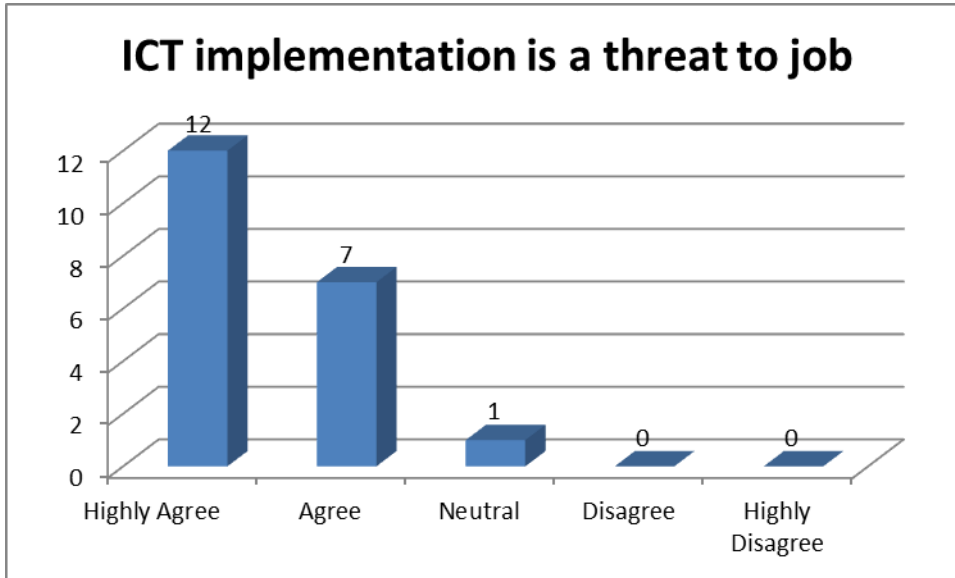
Figure 12: ICT integration can be a threat

Weighted mean score (Mean) = ∑fx/ ∑f

$$= 91/20$$

$$= 4.55$$

Analysis:

From the fig 12, a mean score of 4.55 is obtained which lies very close to the scale of "strongly agree" and this indicates that (almost 100%) staff and nurses of Haven Lodge strongly believe that the implementation of ICT, can be a threat to their jobs as ICT does most of the work activities of the employees and therefore it can make the staff redundant

Issue 4: Lack of 24/7 ICT support in the workplace, coupled with concerns about the reliability of ICT

To what extent do you think that there is a need for 24/7 ICT support in order to provide reliable support to the patients?
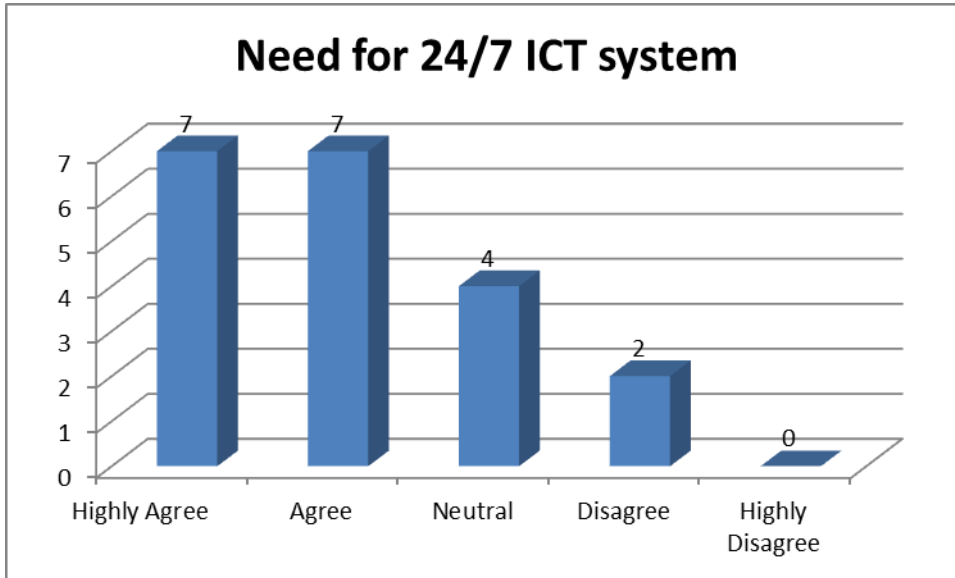
Figure 13: Need for 24/7 ICT support

Weighted mean score (Mean) = $\sum fx / \sum f$

$$= 79/20$$

$$= 3.95$$

Analysis:

From the figure 13, a mean score of 3.95 is obtained which lies very close to the scale of "agree" and this indicates that (90%) staff and nurses of Haven Lodge believe that the present workplace is in need of integrating 24/7 ICT support in the form of e-health systems. So this can further extend the scope and quality of providing services.

To what extent do you think that the use of ICT can enhance the flow of information between the patients and staff?
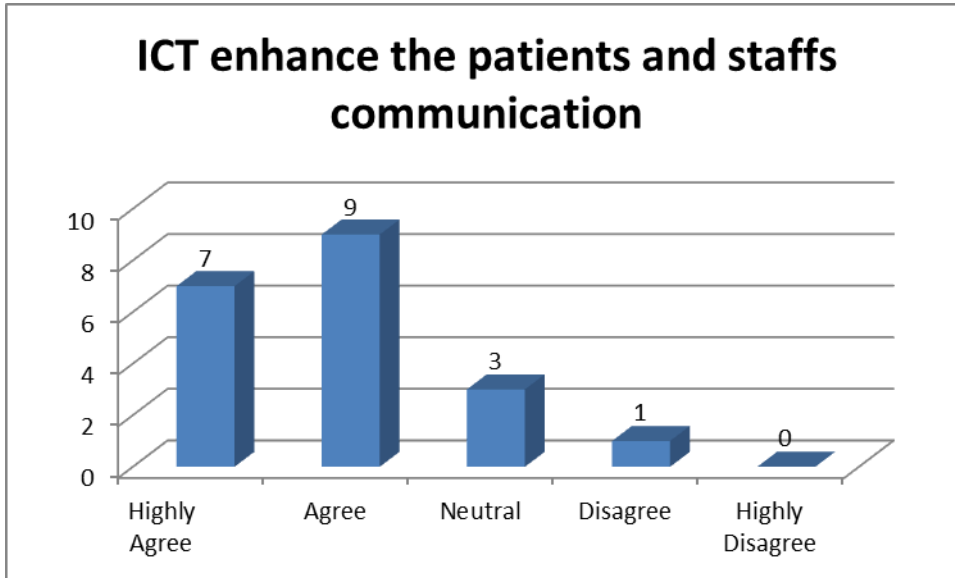
Figure 14: ICT enhance flow of information between patients and staffs

Weighted mean score (Mean) = $\sum fx/ \sum f$

$\qquad = 82/20$

$\qquad = 4.1$

Analysis:

From the fig 14, a mean score of 4.1 is obtained which lies very close to the scale of "agree" and this indicates that (95%) staff and nurses of Haven Lodge believe that with the implementation of ICT, better and 24/7 communication can take place between the staff of Haven Lodge and the patients which directly enhances the quality of services.

Issue 5: Lack of education and training, coupled with worries of extra financial burden

To what extent do you think that training and development is needed for the new ICT system?

ICT implementation need training and development
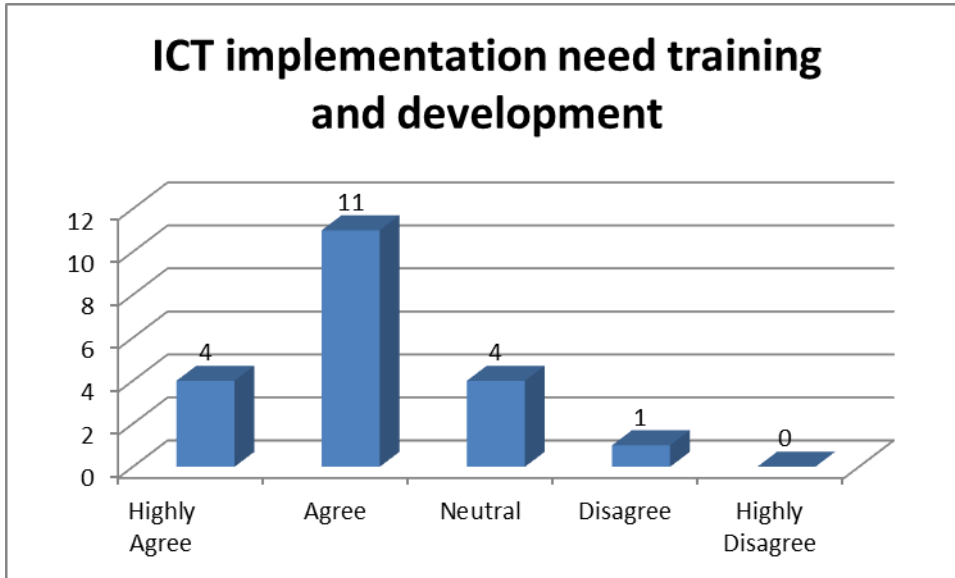
Figure 15: Implementation of ICT needs training & development

Weighted mean score (Mean) = $\sum fx / \sum f$

$$= 78/20$$

$$= 3.9$$

Analysis:

From the fig 15, a mean score of 3.9 is obtained which lies between the scale of "agree" and the scale of "Strongly agree" and this indicates that (90%) staff and nurses of Haven Lodge are in need of training and development after the implementation of ICT. This indicates that Haven Lodge should have extra financial funding for carrying out training and development.

16: To what extent do you think that the integration of ICT can attract more patients due to the enhancement of the services?
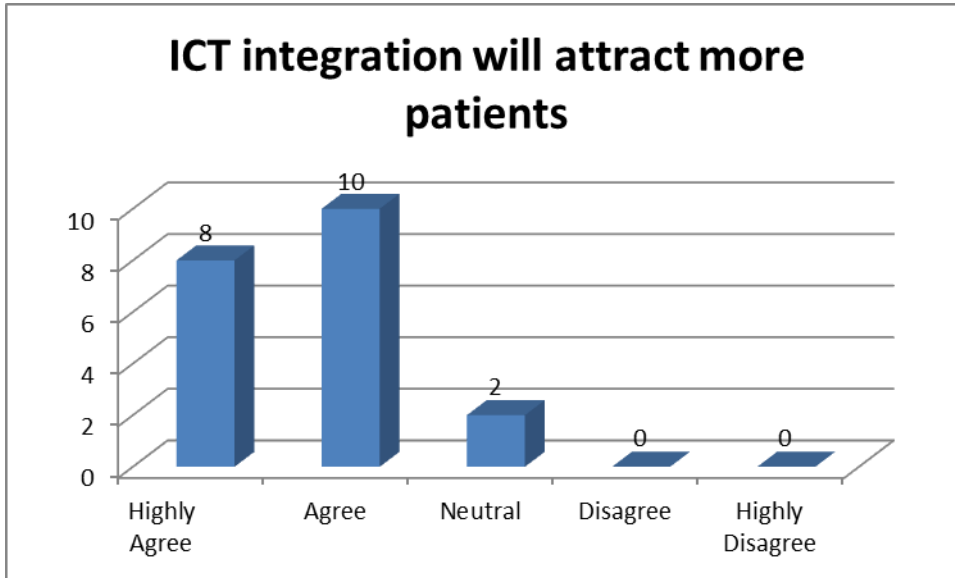
Figure 16: ICT integration will attract more patients

Weighted mean score (Mean) = $\sum fx / \sum f$

$$= 86/20$$

$$= 4.3$$

Analysis:

From the fig 16, a mean score of 4.3 is obtained which lies between the scale of "agree" and the scale of "Strongly agree" and this indicates that (almost 100%) staff and nurses of Haven Lodge believe that with the implementation of ICT, extended hours of services will be made and more enhancement in communication as well as in services can be acquired and therefore it can attract more patients in future.

Issue 6: Lack of awareness of the security and Integrity issues.

17: To what extent do you think that the staff and patients need to be aware of the various security and integrity issues?
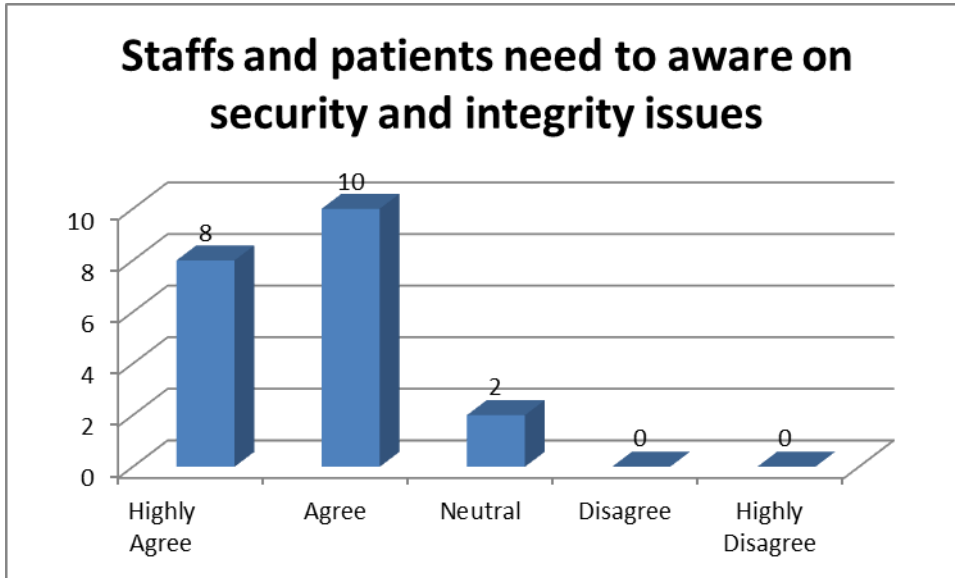
Figure 17: Staffs and patients need to be aware with the security and integrity issues

Weighted mean score (Mean) = $\sum fx / \sum f$

$$= 86/20$$

$$= 4.3$$

Analysis:

From the fig 17, a mean score of 4.3 is obtained which lies between the scale of "agree" and the scale of "Strongly agree" and this indicates that (almost 100%) staff and nurses of Haven Lodge think that the staff as well as patients need to be aware of the different security and integrity issues for which again training development should be made by the management of Haven Lodge.

Test of Hypotheses

Chi-Square test x^2 is been defined as a statistical approach in testing a hypothesis by making use of sampling distribution. It is collectively calculated as the sum of the squares of distributed random variables, whose values is compared with the expected frequency with that of observed frequency. In this test, the hypothesis becomes through, if the calculations prove to be a null hypothesis.

.H1:   Implementation of ICT in Haven Lodge, UK will significantly enhance the

quality of services.

H0: Implementation of ICT in Haven Lodge, UK will not significantly enhance the quality of services.

Expected (assuming independence)

	Agree	Disagree	Total
Technical	5	5	10
Non-technical	5	5	10
Total	10	10	20

Table : Responses of technical and non-technical staffs in Haven Lodge, UK (Observed)

Category	Agree	Disagree	Total
Technical staff	8	5	13
Non-Technical Staff	4	3	7
Total	12	8	20

The chi-square statistic was used in the test of the above hypothesis

Under the following conditions:

Level of significance ➔ 0.05

Degree of freedom➔10

1. CHI-SQUARE COMPUTATION OF HYPOTHESIS

The test statistic
The test statistic is given as

$$X^2cal = \sum_{i=1}^{k} \sum_{j-1}^{k} \frac{(Or_{ji} - E_{ji})^2}{E_{ji}}$$

Where O_{ji} = the observed frequency

E_{ji} = the expected frequency

The expected frequency E_{ji} is given as

$$E_{ji} = \frac{Row\ total\ x\ column\ total}{Grand\ total}$$

Computing the expected frequencies from the table

$E_{11} = \frac{33x280}{300} = \frac{9240}{300} = 30.8$

Therefore $E_{11} = 30.8$

$E_{12} = \frac{33x20}{300} = \frac{660}{300} = 2.2$

Therefore $E_{12} = 2.2$

$E_{21} = \frac{267x280}{300} = \frac{74760}{300} = 249.2$

Therefore $E_{21} = 249.2$

$E_{22} = \frac{267x20}{300} = \frac{5340}{300} = 17.8$

Therefore $E_{22} = 17.8$

It gave rise to 1 degree of freedom, as we are dealing with contingency table of order 2x2.

We have to apply Yate's correction of continuity in computing the X^2cal from a 2x2 contingency table, which is given as

$$X^2cal = \sum_{i=ii}^{k} \sum_{j-I}^{k} \frac{(Orji - Eji)-0.5^{2}}{Eji}$$

Therefore X^2cal = $\frac{(30-30.8) – 0.5^{2}}{249.2}$ + $\frac{(3-2.2)– 0.5)^{2}}{17.8}$ + 8. 2.2 + $(250 – 249.2) – 0.5^{2}$ + $(17-17.8) – 0.5)^{2}$

X^2cal = $\frac{0.09 + 0.09 + 0.09 + 0.09}{0.8 \quad 2.2 \quad 249.2 \quad 17.8}$

X^2cal = 0.0029 + 0.0409 + 0.0004 + 0.0051

X^2cal = 0.0493

Solving for the X^2tab (Please refer chi-squared distribution table)

A 2x2 contingency table gives rise to a X^2 (2-1) (2-1) = X^2 (1)

Where $\acute{\alpha}$ = 0.05 and degree of freedom = 1 (calculated above)

$\rightarrow X^2$ tab ^{with} $\acute{\alpha}$ as 0.05, and degree of freedom as 1 = 3.841.

Reference from chi-squared distribution table

Therefore X^2tab = 3.841 and

X^2cal = 0.0493

The following results were obtained

X^2 calculated (from the actual calculation) ➜0.0493

X^2 tabulated (from the distribution chart) ➜3.841

It shows that X^2cal. is < (less than) X^2tab. Hence we accept H1.

Result: Since X^2cal is less than X^2tab, the Null hypothesis is satisfied and accepted so we can conclude that implementation of ICT in Haven Lodge, UK will significantly enhance the quality of services.

Discussions

Lack of national or global vision of the future and lack of education and training, coupled with worries of extra financial burden

The findings from literature review were clear that many health and social care centres in the UK are in a need for "blue sky" High-Tec global/national vision of the future   (Kaino, 2007) which get justified from the analysis of primary data that, (90%) nurses and the staffs of Haven Lodge believe that there is a wide gap in strategic vision and there is a strict need for the implementation of ICT in order to help the organisation with people management, project management and also to create perspective business or management concept.

Therefore this makes it clear that these health and social care centres in the UK lack with operational experience and have a large gap among the required strategic visions. There is a huge demand for the integration of global e-health systems in all the health and social care centres of the UK in order to cope up with the required demand for maintaining quality and providing extensive support to the patients for 24/7. (Millennium Development Goals, 2008)

This strategic view is not present in Haven Lodge centre for which, it becomes a challenge for them to implement the ICT system in their organisation. To plan the future vision of the centre, there is a need for proper management, financial management and future forecasting.

From the analysis, it is also evident that nurses and other staff of Haven Lodge are keen to seek best practices and to utilise ICT/e-healths systems by which they will be able to fill the

existing strategic loopholes of care present in Haven Lodge with respect to the required national or global vision of the future.

From the discussion, the possible solution for this challenge is;

Possible solution
Instead of promoting continuously the good aspect of ICT, there is a need to focus on meeting the challenges in order to fill the strategic gap.
The government of the UK needs to recognise the shortfall of educational programs associated with health Informatics. This initiation by the government can help in taking the required strategic action.
All the nurses and staff of health and social care Centre i.e. Haven Lodge, UK must participate and provide the necessary changes that need to take place in order to minimise the gap present in their organisation with respect to the required national standard.
Management needs to play an important role in recognising the strategic changes needed and the innovation that needs to be incorporated with their activities so as to have a win-win approach.

Lack of effective integration of e-health systems and pathways of care across health/social care

The findings from the literature review outlined the fact that ICT (or IT) helped many organizations in different sectors within the staff training. For instance, training in the mental health trusts field is done online with a record of the training itself: the ICT system, through an automatic email, does send a refresher course after/ within a certain time (usually when the training expires), to the involved staff (Kaino, 2006). Also, ICT helps many users with mental health diseases and providing 24/7 monitoring.

The above findings support and get validated from the analysis of primary data that, (90%) nurses and staff of Haven Lodge, UK believe that there is a lack of effective integration e-health system in the workplace. Majority of the respondents reflect the point that there is a need for enhancing the working quality along with the need for interdisciplinary communication.

This makes it clear that there is a need for creating a pathway of care in Haven Lodge, UK for which improving quality and creating an effective communication among the staff and patients are important and this requires the need to integrate the ICT system along with their existing practices.

Implementation of ICT system has improved the quality of work as well as the quality of services given to the patients as compared to that from past years. The implementation of ICT has bought efficiency in the operation of health and social care (Hawkins, 2005).

From the discussion, the possible solution for this challenge is;

Possible Solution
All the stakeholders need to be involved during the start-up process of the ICT implementation project so as they can plan the communication policies and developing the quality services.
Before the implementation of ICT system, evaluation of new method should be made with the project management team and with the other professional bodies who have already implemented the ICT system in their organisation.
It is required to give individual registrants powerful regulatory backing to argue for the necessary changes and requirement on what is needed to improve communication and quality in Haven Lodge.
It is important for the project team to include commercial companies' methodology in order to outline the key success factor before the implementation of ICT.

Resistance of change among the nurses and other members

The findings from the literature review made it clear that all the advantages with the implementation of ICT can lead to staff redundancy and less number of staff working hours.

The above findings on resistance gets further validated from the analysis that , (80%) staff and nurses of Haven Lodge are satisfied with their current working system (i.e. manual). It

is also found from the analysis of primary data that (90%) staff nurses of Haven Lodge are excited in accepting the new change (i.e. implementation of ICT system) but on the same side (almost 100%) staff and nurses are having a threat in their mind that they might lose jobs, once the implementation of ICT system takes place. They are also concerned of getting more workload and might be isolated in representing their individual critical thinking ability. This implication creates a threat into the mind of the nurses and other staff in health and social care centres of UK. (Lee, 2005). Moreover nurses and other staff are not acquainted in managing virtual environment where they have to manage the patients. On the other side (90%) nurses and other staff of health and social care centres are aware of the fact that the implementation of ICT in the form of e-health systems can make the work process simpler and to the further extent it can also help to exchange knowledge & education, support research, extracting useful information which can support decision making process.

From the discussion, the possible solution for this challenge is;

Possible Solution
• Motivate the employees to accept new system
• Create a clear vision regarding new system
• Select a competent leader for conducting any change

Lack of 24/7 ICT support in the workplace, coupled with concerns about the reliability of ICT

From the findings from literature review showed that presently majority of the health and care sector in the UK lacks the support of 24 x 7 ICT. Moreover lack of access to the appropriate hardware often results in large requirement of financial resources (Winkelman 2008).

This findings is also supported from the analysis of primary data that, (90%) nurses and staff of Haven Lodge agreed to the fact that there is a need of 24/7 ICT support to be integrated into the workplace for enhancing the support to the patients and to cover the strategic gap with respect to the national requirements. (90%) Nurses and staff of Haven

Lodge also believe that with the use of ICT system the flow of information will become easier by which the communication can take place among the workplace and with their patients. To the further extent, (95%) majority of the nurses and staff of Haven Lodge believe that with the use of ICT system, the quality of the services can be enhanced but it will result in high expenditure for implementing the required ICT support in the workplace. Hence it conclude that acquiring appropriate hardware and software of latest technologies often costs too much for many health and social care sectors and in many cases it results in poor performance. In many cases, health and care centres make use of minimum ICT systems in the workplace in order to minimise the cost of expense in the use of ICT.

From the discussion, the possible solution for this challenge is;

Possible solution
Involve all the stakeholders during a feasibility study so that during the project management, appropriate hardware and software equipment can be outlined
To involve all the nurses and staff in decision-making process in order to figure out the minimum requirements and the type of activities and processes which need to be carried out for providing 24/7 support to the patients.
A feasibility study needs to be done to outline the risks that can be generated after the implementation of ICT.
Management of the health and social care centres and the project managers should come up with innovative win-win solution.
To make an access on the issues present in various health and social care centres in the UK who have already implemented ICT and then coming out with an appropriate or innovative solution.

Lack of awareness of the security and Integrity issues.

From the secondary data, it was also concluded that there is a need for true patient empowerment and therefore while designing or implementing the ICT system, all the stakeholders should be involved in the decision-making process (Willison et al. 2008) .

This finding from the literature review also stated the fact that there is also a need for the implementation of standards and policies in all health and social care centres implemented with ICT in the UK, which can address the issues related to privacy and integrity which is validated from the analysis of primary data that, (almost 100%) nurses and staff of Haven Lodge believe that patients need to be made aware with the various online security and integrity issues. Since the security issues generally create legal issues therefore nurses and staffs of Haven Lodge need to be aware of the misuse of potential data from the workplace for which accountability consideration needs to be established in the workplace in the form of policies.

Therefore it can be finally argued that implementing the ICT system should be integrated with the policies and standards that address right to privacy so that it can help to eliminate fragmentation in all health and social care centres of the UK. To the further extent the nurses and the staff of Haven Lodge need to acquire knowledge in relation to decision-making, security and confidentiality of records and issues in relation to access of important data.

From the discussion, the possible solution for this challenge is;

Possible Solution
Management of health and social care centres in the UK should include all the issues related to security and integrity in their entire educational and training program.
This provides timely support and guidance on the various issues and threats that can be encountered with the online e-health system.
To carry out research with the other health and social care centres on the various security and integrity issues encountered by them, who have already implemented the ICT.
To carry out independent assessment and strategic planning with the implementation of ICT in the concerned health and social care Centre.

Conclusions

The final outcome in relation to the project questions has been presented in this chapter. After conducting this project, this section will provide the various challenges that can be encountered with the implementation of ICT in health and social care centres of the UK.

What are the critical factors or obstacles which have restrained many privately owned healthcare of the UK in implementing ICT into their process and business model and what are its impact?

From the finding on this project it can be concluded that the proper strategic management is not present in Haven Lodge centre, UK for which it is challenging for them to implement the ICT system in their organisation. Planning the future vision of the centre is in need of proper management, financial management and future forecasting. From the project findings, it is also evident that nurses and other staff of Haven Lodge are keen to seek best practices and to utilise ICT/e-health systems by which they will be able to fill the existing strategic care present in Haven Lodge with respect to the required national or global vision of the future. Haven Lodge, UK is in need for "blue sky" High-Tec global/national vision of the future. The management of Haven Lodge, UK also lacks the operational experience and has a large gap among the required strategic visions.

Management of Haven Lodge, UK needs to play an important role in recognising the strategic change needed and the innovation that needs to be incorporated within their activities so as to have a win-win approach. All the nurses and staff of health and social care Centre i.e. Haven Lodge, UK must participate and make the necessary changes that should take place in order to minimise the gap present in their organisation with respect to the required national standard. From the analysis, nurses and staff of Haven Lodge, UK believe that there is a lack of effective integration e-health system in the workplace. It also reflects the point that there is a need for creating a pathway of care in Haven Lodge, UK for

which improving quality and creating communication among the staff and patients is important and this requires the need to integrate the ICT system with the workflow and with their existing practices.

To achieve the above specified pathway, all the stakeholders need to be involved during the start-up process of the ICT implementation project so that they can plan with the communication policies and development of the quality services. It is important for the project team to include commercial companies' methodology in order to outline the key success factor before the implementation of ICT. Though the staff and nurses of Haven Lodge are satisfied with their current working system (i.e. manual) and are scared that they might lose jobs, once the implementation of ICT system takes place. They are also concerned of getting more workload and might be isolated in representing their individual critical thinking ability. This challenge can be managed by making use of motivation in the form of financial and non-financial benefits. Haven Lodge is also in need of 24/7 ICT support which need to be integrated into the workplace for enhancing the support to the patients and to cover the strategic gap with respect to the national requirements. The flow of information will become easier among patients and staff of Haven Lodge, once the implementation of ICT takes place. The quality of the services will also be enhanced but it will result in high expenditure for implementing the required ICT support in the workplace.

Moreover lack of access to the appropriate hardware, finance is another constraint for Haven Lodge, UK. But then carrying out feasibility study on making minimal use of ICT systems can cut down the cost of expense. The system needs to be so planned so that future upgrades   can take place along with the enhancement in their financial aspect. And at last, lack of awareness on the security and integrity issues in relation with online e-health system was also present among the employees of Haven Lodge. But on the same side, they were well aware with the fact that the staff can have the potential fear of the misuse of sensitive data. This problem can be overcome by providing timely training and development of the staff and nurses of Haven Lodge. There is also a need for creating an awareness of these issues to the patients. This responsibility will be handled by the staff and nurses of Haven Lodge.

Does the implementation of ICT create a significant impact in improving their business and quality services?

There is no doubt that the findings from this project still clarify the fact that there is a huge demand for the integration of global e-health systems in all the health and social care centres of the UK in order to cope up with the required demand for maintaining quality and providing extensive support to the patients for 24/7. The implementation of ICT in the form of e-health systems does make the work process simpler and to the further extent it can also help to exchange knowledge & education, support research, extracting useful information which can support decision making process. The quality services can be given by the health and social sector, only if they are able to manage the complete database of the patient and this needs to be communicated among all the members of the organisation so as immediate services and facilities can be imported to the customers. This sharing of information between the healthcare workers and the patients can be achieved only with the implementation of ICT system.

In other words, implementation of ICT can not only promote improved patient care but it will also enhance the quality of work which will drive the cost of operations in futures and can help those organisations to survive for longer time. The use of ICT system also helps the management in managing their clinical features, financial as well as administrative part of their units. Implementation of ICT is being considered as an innovative tool for carrying out effective communication among the patients and staff along with a proper management on all the information of the patients. This enhances the quality of business as well as services.

Moreover, the calculation on chi-square theory done at the end of chapter 4, indicates and supports the hypothesis that there is a significant transformation on the quality of services in the implementation of ICT in a health and social care centres of the UK.

State if objectives met!

Recommendations

This section provides the recommendations on activities and strategies on how the care home can overcome the challenges during the implementation of ICT

Recommendations regarding structure perspective

From the secondary data, it has been accessed that the main challenge encountered during the implementation of any change is "resistance of change by the employees". The reason for this resistance is that the employees and their existing staff do not have sufficient knowledge on health Informatics and IT and therefore they always remain in a dilemma that they might lose their jobs or might not be able to cope up with the workload with the new system. Success for this project can be made, if the resistance from the employees of health and social care centres can be eliminated.

In this regard the following recommendations need to be considered by the health and social care centres;

• **Outlining a proper and clear vision in accordance with the required national standard**

There is a huge demand for the integration of global e-health systems in all the health and social care centres of UK in order to cope up with the required demand for maintaining quality and providing extensive support to the patients for 24/7, therefore a clear vision need to be outlined which can cope up with the present demand. Creating a clear vision can not only help to fill the strategic gap but it will also help to plan out the most cost-effective and innovative change.

• **Motivate staff and nurses of Haven Lodge to participate in process designing**

It is essential to assure that the staff and nurses of Haven Lodge on-the-job protection as this motivation can help them in participating in the process designing and to come up with innovative ideas.

• **Employee's satisfaction of Haven Lodge should be made during the designing process.**

It is necessary for making all the staffs and nurses of Haven Lodge to be satisfied during the designing phase as the dissatisfaction among the employees can fail to extract the necessary functionality requirements in the ICT system. In this designing phase requirements of staff and nurses of Haven Lodge should be given more importance and priority.

• Motivate the employees to accept new system.

The project leaders and the management of health and social care sector should plan and carry out motivational programmes and assuring them on-the-job protection as well as discussing the future aspects with the employees in the form of financial and non-financial benefits.

• To elect an efficient and competent leader for conducting change

Electing an efficient and competent leader for conducting change enhances the probability for its success. Skills and the other features such as assertiveness, fairness, creativity, openness and dedication need to be present among the project leaders. This is due to the fact that a good leader can effectively manage the risk associated with the change.

Recommendations on technology perspective.

From the finding of this project, it also clear that there is a lack of appropriate hardware and software in Haven Lodge for carrying out 24/7 services. Therefore the following suggestions need to be considered by Haven Lodge for initiating the implementation process of ICT.

• Establish an IT department in Haven Lodge.

Since Haven Lodge is not having large financial resources, therefore Haven Lodge can start with initiation to establish an IT department for which they need to have a flat organisational structure. The IT department in the Haven Lodge will collectively work and provide support to all the members of Haven Lodge in making effective communication.

• Consult or Hire third-party consultant for initiating the implementation of ICT.

Since implementing ICT is associated with risk as technology changes and gets obsolete in few months and more over in many cases the effectiveness of carrying out process

decreases in certain cases. Therefore consulting or hiring third-party consultant can help to develop a latest infrastructure that can meet the requirement of Haven Lodge.

• Establish IT and telecommunications infrastructure in Haven Lodge

There is a need for establishing telecommunication infrastructure in Haven Lodge for providing services online with the use of e-health systems. Hence there is a requirement for continuous monitoring, training and repairing of these systems.

Recommendations regarding people perspective.

From the finding of this project, it is found that employees of Haven Lodge, UK require the necessary training and awareness program in order to achieve success with the implementation of ICT system in their organisation. Therefore below are some of the recommendations in order to improve the skills and knowledge of their employees in relation to health Informatics and IT;

• Arrange training workshops for employees

Arranging training workshops for employees will help the nurses and staff of Haven Lodge to improve their skills and knowledge on information systems and also in increasing awareness on the security and integrity issues.

• Arrange awareness programs for employees

Arranging awareness program on the advantages and usefulness of health Informatics should be made by the management of Haven Lodge, UK. On the other side the government of the UK also need to recognise the shortfall of educational programs associated with health Informatics. This initiation by the government can help in taking strategic action and to cover the lack of national of global vision of the future.

Recommendations regarding implementation approach

• Ensure active involvement of the staff and nurses of Haven Lodge in the process designing

Staffs and nurses of Haven Lodge should be involved in the process designing phase so that the final outline of the project can indicate the necessary functionality which can help them in carrying out their daily work in a more effective and efficient manner.

• Carry out survey on the issues presently existing with the implementation of ICT in other health and social care centres in UK

Carrying out survey and research will help the project team in finding the issues generated with the implementation of ICT. The finding will act as a critical success factor by which the project management team can plan ahead and easily overcome the challenges and issues.

• Designing the final plan and acquiring acceptability from all the stakeholders

Acquiring acceptability from all the stakeholders is important so as the project management team can find out new information that needs to be integrated into the system. This will also help in the final acceptance from the users of these systems.

• Testing

After the development of the system, Alpha-testing and Beta-testing can be done in the form of load testing, stress testing, performance testing, etc. in order to make the system free from any issues and errors. The reason for carrying out two phase of testing is because Haven Lodge is in first stage of implementing ICT therefore any errors or failure made in the first place will discourage the Centre in providing financial ground for the next approval.

• Parallel implementation approach should be employed

Since Haven Lodge is responsible in giving services on a daily basis therefore parallel implementation approach is highly recommended. This is because in case of any failures or risk encountered after the final implementation of ICT, it can result in a complete closure of all the activities in the workplace. Hence carrying out a parallel implementation can support both the working of manual works and ICT. Hence, it will become easier for Haven Lodge to migrate from old system to the new system.

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