2019

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5-21-2019

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## ABSTRACT

Technological change in the healthcare environment provides opportunities to improve quality of care, increase patient satisfaction and reduce costs. However, employee training is seen as a major factor that influences the change management processes of healthcare projects. This research focuses on the healthcare providers' perceptions of Health Information Technology project training. A qualitative survey was used to collect physicians' and healthcare provider responses. Open coding was used to analyze the data. Our findings reveal that the physicians and healthcare providers are not satisfied with the Health Information Technology project training. From the analysis, we identify five categories that influence user training.

### Keywords

Healthcare, Information Technology, Health Information Technology, Healthcare IT, Healthcare IT user training

## INTRODUCTION

The integration of Information Technology (IT) has enabled organizations to improve their business processes and to deliver services to customers more efficiently. Healthcare is no exception to this advancement. Computers, mobile devices, smartphones, and digital applications are integrated into the patient care process (Ventola, 2014). Wearable technology enables consumers to self-monitor their health, and the Internet of Things helps the care providers improve their experience of care by means of pervasive smart networking, data collection, machine-to-machine methods and other solutions (Metcalf, Milliard, Gomez, & Schwartz, 2016). Health Information Technology (HIT) enables care providers and patients to exchange health information in an electronic environment. The use of HIT improves quality of healthcare, reduces paperwork and increases access to affordable care (U.S. Department of Health and Human Services, n.d.). The Health Information Technology for Economic and Clinical Health (HITECH) Act encourages the adoption and meaningful use of HIT. While providing quality care to patients, HIT also enables them to directly access their health information through electronic tools such as online portals and mobile apps (Mackert, Mabry-Flynn, Champlin, Donovan, & Pounders, 2016).

In order to shift to this technology-oriented model, healthcare organizations should adopt various project and change management strategies to successfully accomplish the transformation (Allcock, Dormon, Taunt, & Dixon, 2015). Change Management provides a systematic, integrated approach for a constructive change (Al-Haddad & Kotnour, 2015). It has become a norm for organizations to change in order to succeed (Heerwagen, 2016). In this process, user training plays an important role.

According to Gomes and Romao (2015), studies reveal high failure rates of HIT projects. They found that training is necessary for the successful implementation and use of IT. Training is a considerable determinate in the success or failure of a project (Gomes & Romao, 2015). Also, training provides an opportunity to diminish the resistance seen among the doctors to the ongoing change in the field (Kruse, Kristof, Jones, Mitchell, & Martinez, 2016).

## LITERATURE REVIEW

According to Shea & Belden (2006) research studies indicate HIT project champions influence the perceptions of healthcare professionals. In a 2015 study conducted at a premier medical university, the results showed that the staff had an average knowledge in IT (Khan, Kijsanayotin, Sinthuvanich, Soonthornworasiri, & Lawpoolsri, 2015). Almost half of the nurses had

no experience using technology. This indicates that training will be required to improve their knowledge, skills and abilities to use IT systems (Khan, Kijsanayotin, Sinthuvanich, Soonthornworasiri, & Lawpoolsri, 2015). Granja, Janssen, and Johansen (2018) reviewed previous research to determine the factors that affect the eHealth intervention projects. From their study, it was found that technology systems which are implemented that do not align with the old clinical processes are a significant barrier that hinder project success. There is a need for change management to implement new processes and provide training for staff. A study by Ifinedo (2016) reveals that the acceptance of IT implementation by nurses is one of the main factors in the success or failure of a HIT project. Computer training and knowledge are viewed as important factors for nurse acceptance of HIT implementations. Thus, it is recommended that basic computer knowledge and training be included in the nursing program to develop higher levels of experience and computer knowledge to increase IS acceptance (Ifinedo, 2016).

In a study by Alipour, Karimi, Ebrahimi, Ansari, and Mehdipour (2017), there were mixed results. The IS implementation was successful from a functional, cultural and ethical perspective, but, in terms of behavioral and educational factors, it was considered a failure. Based on the results (Alipour, Karimi, Ebrahimi, Ansari, & Mehdipour, 2017) it is suggested that in-service training for new users and refresher training for existing users is absolutely necessary. The literature also indicates that user training in the healthcare sector plays a major role in determining the success or failure of IS implementations.

Research indicates that the factors which influence stakeholders are the physicians and the care providers' knowledge of IT (Khan, Kijsanayotin, Sinthuvanich, Soonthornworasiri, & Lawpoolsri, 2015; Ifinedo, 2016; Alipour, Karimi, Ebrahimi, Ansari, & Mehdipour, 2017), training (Granja, Janssen, & Johansen, 2018), age (Khan, Kijsanayotin, Sinthuvanich, Soonthornworasiri, & Lawpoolsri, 2015; Ifinedo, 2016; Alipour, Karimi, Ebrahimi, Ansari, & Mehdipour, 2017) and experience (Khan, Kijsanayotin, Sinthuvanich, Soonthornworasiri, & Lawpoolsri, 2015; Ifinedo, 2016; Alipour, Karimi, Ebrahimi, Ansari, & Mehdipour, 2017). User training plays a major role in the successful implementation of a HIT project (Khan, Kijsanayotin, Sinthuvanich, Soonthornworasiri, & Lawpoolsri, 2015; Granja, Janssen, & Johansen, 2018; Ifinedo, 2016; Alipour, Karimi, Ebrahimi, Ansari, & Mehdipour, 2017), therefore, it is important to understand the physicians' and the care providers' perceptions of IT user training in their organization. This study will investigate the research question, "What are healthcare providers' perceptions of HIT project training?"

## METHODOLOGY

This research uses a qualitative survey methodology with open coding for data analysis. The combination of qualitative methods and open coding enable discovery of relationships in a real-world situation. Qualitative methods produce descriptive data, using either spoken, written words, or observable behavior by people. Qualitative methods are concerned with the meaning that people attach to things (Taylor, Bogdan, & DeVault, 2015). Open coding enables constant comparison of the data to develop categories of events, actions or interactions (Blair, 2015).

## DATA COLLECTION

We used a survey tool to obtain the primary data responses from participants. The data was collected using quantitative and qualitative questions with a survey tool developed by Noteboom and Behrens which was approved by our university's IRB on 2017-18-10. The study involved sending a survey via email to 16 physicians and care providers at a rural hospital. The participants are physicians and care providers with a variety of ages and specialties in a rural Midwest hospital. The care providers have many roles that range from walk-in clinics to emergency care. We surveyed all the physicians, nurse practitioners, and physician assistants at the selected institution. The specialties include, but are not limited to, surgeons, midwives, nurse practitioners, physicians, and physician assistants. We received 11 responses for a response rate of 68.75 percent. The completion rate was 91 percent. One aim of the questions was to gather information regarding training on HIT projects.

## DATA ANALYSIS

The data was analyzed using open coding. First, we abstracted the participants' responses in the form of codes. We then compared our codes and summarized them into concepts and categories. The table below shows the categories and definitions that affect HIT project training identified through our analysis.

| Categories | Definitions |
|---|---|
| **Domain Knowledge** | The HIT project trainers and IT support staff do not possess the domain/clinical knowledge to efficiently train the physicians and care providers |
| **Consistency** | HIT new project training is not made available to all the care providers |
| **Proactiveness** | Proactive training regarding any changes in the HIT projects is not provided appropriately |
| **Efficiency** | The end user training being provided is not effective, which hinders the current patient care process |
| **Trust** | Trust is not established as sufficient training is not provided and IT staff are not available during after-hours and weekends, which is a major concern for care providers |

**Table 1. Categories and definitions**

Domain Knowledge related to a lack of clinical domain knowledge by HIT Project Trainers and IT support staff: Responses such as "The trainers are not clinicians and thus were not familiar with some of the things which would be helpful" and "Poor training" indicate a dissatisfaction with the training competence.

Consistency related to the availability of training for all levels of staff: The respondents' comments, such as, "Spotty training at its best" and "Occ training is not made avail to all providers" demonstrate a lack of consistent training available to all providers.

Proactiveness related to the need for training provided at appropriate times to support implementation and post implementation use: Instances of "Hold meeting for training new changes", "We illiterates with computers need all the help we can get", and "We were told you have to learn it as you go in real time" indicate a lack of timely training opportunities to develop awareness and comfort with the new technologies implemented.

Efficiency reflects the care providers' perspective of end user training being ineffective. The response "Effectiveness is inhibited by the current EMR" implies that their training was not effective and did not align with their current patient care process.

Trust reveals that physicians and care providers do not possess trust in their IT department due to the type of training they receive. They show their lack of confidence with the responses such as "Insufficient end user training" and "We seem to have fallen off with hands on type training where we meet and show us first hand".

## RESULTS & DISCUSSION

Our analysis found that more than half of the respondents answered that the training provided for HIT projects being implemented was insufficient or ineffective. One respondent said, "the trainers do not have the healthcare background." Some clinicians still prefer face-to-face training and at-the-shoulder support. It is very important that the physicians and the care providers are trained properly to implement the patient care process efficiently. At the same time, IT staff and the trainers must possess the clinical domain knowledge to help support the care process in a timely and effective manner. Healthcare is one of the most essential services as it involves treating patients 24 hours a day. As a result, the IT staff should be available 24/7 to respond to end user requests. Efforts to provide consistent, effective training to all healthcare team members must be a priority. Any change or new feature added to the process should be communicated with the healthcare providers. Thus, training plays a major role in a project resulting in a success or a failure.

## CONCLUSION

Advances in information technology are providing opportunities for healthcare to improve the quality of care, increase patient satisfaction and reduce costs. Our results indicate the integration of HIT projects into the fabric of healthcare requires an emphasis on project training to enable successful HIT projects and usage of HIT systems. This research discovered that the perceptions of physicians and healthcare providers indicate necessary attributes of the provided training. It must be provided by trainers with sufficient domain knowledge, with consistent availability, within a proactive time frame, with an efficient focus to develop trust in the implementation. The findings have answered our research question "What are healthcare providers perceptions of HIT project training?" and shows that healthcare organizations should focus on training initiatives to improve project success. Future research can be extended by surveying a variety of healthcare clinical and administrative stakeholders.

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