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Research Article

Understanding Stakeholders' Perspective on An Innovative Business Model for Pediatric Immunization Records: A Single Case Study

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ABSTRACT

The purpose of this qualitative case study is to explore the potential value of an innovative business model on pediatric immunization record management which will serve as the basis for the development of a digital platform for the use of pediatric consultants and medical secretaries at a private secondary hospital in Quezon City. The study utilized a qualitative case study involving the pediatric consultants and medical secretaries of a private secondary hospital in Quezon City. Qualitative data for this study were gathered through in-depth, semi-structured interviews, focus group discussions, documents, journaling, and observations. Results have shown that pediatric consultants and medical secretaries follow only one way of arranging patients' records which is through alphabetical order using the surname. Many clinics and hospitals still rely on paper-based medical records to document patients' information. All participants shared the same difficulties and sentiments when it comes to the problems they have in the current way they deal with immunization records. Based from the statements of the participants, results revealed that pediatric consultants and medical secretaries support and are in favor of the use of a web-based record management system. However, some participants stated their apprehensions for the security of patient information. Further study that focuses on formal training is recommended to increase the confidence of the healthcare workers in utilizing digital record management systems and intense exploration of the potential challenges in adapting a digitized records management system must be conducted.

Keywords: *Innovative business model, Pediatric immunization records, Web-based record management*

Introduction

History has shown that vaccinations have provided solutions which led to the

eradication, elimination, and control of many serious illnesses. During the onset of the COVID 19 pandemic during the first quarter of 2020,

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the scientific community began the task of coming up with a vaccine that will help in treating the unknown virus which threatened the existence of mankind. This endeavor gave more emphasis on the importance of vaccination as a powerful life-saving weapon in the fight against infectious diseases. However, despite the real danger that infectious diseases pose to health and the proven historical importance of vaccines, less emphasis on the importance of proper handling of vaccination information has been identified. Compulsory immunization plans must be accompanied by effective education and information strategies, paying attention to the spread of data not supported by scientific evidence (Gallè & Napoli, 2022). In addition, the proper and efficient documentation of vaccination records is seen as an urgent matter that needs to be addressed.

In the Philippines, if the immunization record cannot be found, it will be the responsibility of the health care professional to decide if he will be repeating the administration of the vaccines that was supposed to have been given beforehand. Although extra doses of vaccines may not be harmful, this will mean additional cost and time for the family. Because of this, the proposal to have an effective way to keep immunization records is very important and timely.

In situations where domestic and foreign migration is involved, challenges for encoding and keeping comprehensive immunization data and understanding vaccine coverage must also be taken into consideration. Those related to domestic mobility of individuals within and between jurisdictions (particularly among certain populations such as those who are homeless, undocumented or move frequently) are both a result of the lack of interoperability between systems described above, and the fact that it is still in the period of transition from paper to digital (American Immunization Registry Association). Mipatrini et al., (2017) warned that concerns associated with migration may lead to complexities. There might be problems in the administration of vaccines if the health professional is not aware of the type or brand of vaccine that has been given to the patient before they went to him.

Record Management utilizing digital technology can improve efficiency and productivity of business and services in many ways. Limaye et al., (2020) explained that with the potential of technology in information-seeking processes, healthcare institutions could benefit from the use of online channels which may be a valuable tool for sharing medical and scientific knowledge to citizens. An innovative business model on record management through web-based digital archive system for pediatric immunization has the potential to safely organize and keep children's information and immunization and provide easy access to health care providers and patients for their future use. However, an innovative business model that involves the use of a web-based digital archive system for pediatric immunization has not been implemented in any medical institution. It is here that this inquiry is deemed important.

The objective of this study is to explore the potential of an innovative business model on record management through web-based digital archive systems for pediatric immunization to adapt in the advancing digital technology. This hopes to provide convenience to health care providers and patients for their future use. This will help the pediatrician to be aware of this innovation and investigate the significance of web-based digital archive systems on pediatric immunization to their clinical practice.

Purpose of the Study

The purpose of this qualitative single case study is to explore the potential value of an innovative business model on pediatric immunization record management which will serve as the basis for the development of a digital platform for the use of pediatric consultants and medical secretaries at a private secondary hospital in Quezon City. At this stage in the research, the pediatric immunization records management was generally defined as the way pediatric consultants and medical secretaries organize, keep, and retrieve medical records of pediatric patients.

Specifically, the study sought to answer the following questions:

1. How would the pediatric consultants and medical secretaries describe the manner in

- which the pediatric immunization records are managed?
2. What are the challenges that the pediatric consultants and medical secretaries encounter in record management?
3. What experiences do the participants have on digital record management?
4. What do the participants have in mind that may serve as a solution to the challenges in the record management?
5. How do the participants perceive the idea of a web-based digital record management system?

Research Design

The study utilized a qualitative case study involving the pediatric consultants and medical secretaries of a private secondary hospital in Quezon City. The immunization record management that the pediatricians and the medical secretaries are currently using was explored with the use of a questionnaire. Their insights on the digital business model on record management was identified to determine its value on a pediatrician's and medical secretaries' practice and efficiency. A researcher-constructed interview protocol was used to lead the semi-structured interview. It is composed of 11-item questions which are based on the research questions of the statement of the problem of the study. The research instrument is validated by experts whose area of expertise are in line with the topic of the study. These provided the data for comprehensive findings and emerging themes to help answer the overarching research questions. The purpose of this study was to understand the potential of a digital web-based immunization records management system in managing pediatric immunization records.

Research Setting

The study was conducted among pediatric consultants and medical secretaries who are working in a private secondary hospital in Quezon City. The level 2 hospital have emergency and outpatient services, Isolation facilities, Surgical and Maternal facilities, General ICU, and Neonatal ICU. Ancillary services include Clinical laboratory, Radiology, and Blood station. It has departmentalized clinical services in

the field of Dentistry, Medicine, Obstetrics and Gynecology, Surgery, and Pediatrics. The last department of specialty was the focus of the study

Sampling Procedure

Purposive sampling was used in the study to select study participants. The best time to use purposeful sampling is when the researcher wants to concentrate on the depth of relatively small samples. When researching topics likely to have unusual cases or when gaining access to a specific subset of the population with shared characteristics, this method is used.

Participants

The research investigation involved seven participants who are: (1) pediatric consultants and medical secretaries working in a private secondary hospital in Quezon City, (2) with more than five years of practice, (3) administering or assisting in childhood vaccinations, (4) with record keeping system at their clinic for childhood immunization, and (5) who were willing to participate in the study.

Data Collection Method

Qualitative data for this study were collected through in-depth, semi-structured interviews, focus group discussions, documents, journaling, and observations designed and facilitated by the researcher.

1. *Interviews*-participants were interviewed via Zoom application wherein the researcher asked the interview guide questions following a specific set of protocols. During the interview, the researcher guided the respondent with protocols of the interview. He gave them time to speak freely about their perceptions and ideas that were pertinent to the study. Each interview was scheduled to last between 30 and 60 minutes. However, in certain cases, the natural flow of the conversation often ended the session earlier or later than expected.
2. *Focus Group Discussions*- qualitative research method and data collection technique in which the group of participants discussed the concern in-depth facilitated

by the researcher. During the focus group discussions, the researcher guided the respondents who are part of the procedure with protocols of the discussion. He gave them time to speak freely about their perceptions and ideas that were pertinent to the study. Each interview was scheduled to last between 30 and 60 minutes. However, in certain cases, the natural flow of the group conversation often ended the session earlier or later than expected. The researcher saw to it that all of the members of the group were given enough time to speak and share their thoughts.

3. *Journaling*-used by the researcher in recording the participants experiences. The researcher made sure that all necessary information during the duration of the study particularly the interviews were recorded and documented following protocols identified at the beginning of the study.
4. *Observation*-used by the researcher in watching and examining what is happening in the setting and documented what was seen. The researcher, with the consent of the research participants obtained documents which contains relevant information about patient's vaccination information. All the documents were used to make sense of the responses of the participants and served as guide in making conclusions and recommendations.

To fill in any gaps in the data or fill in any missing data, follow-up interviews were undertaken. During the interview, the researcher guided the respondent with a specific, predetermined set of questions, giving them time to speak freely about their perceptions and ideas that were pertinent to the study. Each interview was scheduled to last between 30 and 60 minutes, however the natural flow of the conversation often ended the session earlier or later than expected. Because the interviews were semi-structured, the researcher was able to ask clarifying questions that prompted the respondents to elaborate on their ideas or discuss the justifications for the perceptions they shared. The participant picked a private venue for the interviews, which were

conducted outside of the respondent's scheduled work hours, so they could feel at ease and secure while discussing their thoughts and feelings with the researcher. The interviews were recorded on audio, and afterwards transcriptions were made. Field notes were produced after the fact while listening to the audio recordings of the interviews in order to avoid detracting from the discussion that was taking place with regard to the participants. Clarification of concepts and responses to the study questions was made possible by a continuous comparison strategy of traveling into and out of the site through several interviews.

Data Analysis

As the method of gathering data for this study, semi-structured interviews with open-ended questions were employed. By carefully examining each interview and the associated documents and observations separately, the diverse insights and perspectives expected from each participating pediatric consultant were examined. Data was reviewed for emergent themes and reoccurring ideas that showed themselves throughout each conversation after each interview's transcription and my field notes documenting my observations.

Using coding as a method of data analysis, each interview was coded with the corresponding field notes and observations, and then all of the interviews were evaluated to see if there were any patterns or differences in how people perceived things. This paper illustrates the study's results in applying the six phases of reflexive thematic analysis as described by Braun and Clarke: (1) familiarizing oneself with the data, (2) generating codes, (3) constructing themes, (4) reviewing potential themes, (5) defining and naming themes, and (6) producing the report. The experiences of the participants are highlighted through each phase, outline strategies to support analytic quality, and share practical activities to guide the use of reflexive thematic analysis within the business context as applied to the determination of the potential use of a web-based digital pediatric records management system in managing pediatric immunization records.

Results and Discussion

The primary focus of the study is to explore the potential of an innovative business model on record management through web-based digital archive systems for pediatric immunization to adapt in the advancing digital technology. The researcher particularly designed this study to scrutinize the effectiveness of the digital record system in making the immunization record process more efficient and be achieved without great effort.

1. How would the pediatric consultants and medical secretaries describe the manner in which the pediatric immunization records are managed?

Research question one sought to explore the pediatric consultants and medical secretaries' manner of managing pediatric immunization records in terms of the three defining categories: according to arrangement, reliability, and usefulness. In the data analysis, the researcher has found out that all pediatric consultants and medical secretaries have the same method in arranging the immunization, through alphabetical order and using the surname as the basis. The participants clearly stated that they only arrange their patients' immunization records in alphabetical order by the surname. The participants insisted that it's easier that way, they don't need to be confused on how they will arrange their records because there's only one universal manner of arranging all of the records within their institutions. The participant explained that the records are being handled manually with physical files. The participant also stated they value their patients' privacy that's why only those who are in charge of charting will be allowed to enter the room where all the records of the hospital is stored. Moreover, all records are considered as reliable documents and of the same value. The participants explained that they keep the original copy of the file and that it is considered a reliable document as long as it is the original copy. Findings also revealed that the majority of the hospitals keep the original copy of the immunization record of their patients. In addition to this, they also provide a booklet for personal copy of the parents containing all the immunizations since the child was first

vaccinated. In terms of usefulness, no special arrangement method was identified by the participants treating all the records with the same value. Although documents that were requested by the patient should be issued immediately by the hospital within the first 72 hours (Thomas, 2009).

2. What are the challenges that the pediatric consultants and medical secretaries encounter in record management?

The findings answered the research question two pertaining to the challenges being encountered by the pediatric consultants and medical secretaries in the current record management system. All the participants shared the same experiences and sentiments when it comes to the challenges they have in the current way they deal with immunization records. The most dominant challenges are the high chance of misplacing the record, large amounts of time being consumed for the sole purpose of recording, the lack of storage spaces, the degradation of the used paper if years have already passed this is evident in the study of Bali et al. (2011) that several type of damage which may be encounter in using paper for documentation like too old paper may somehow become weak and can easily broken, alteration in color. In the issue of misplacing records, many responses were recorded that this incident happens because sometimes their patient volume increases and that the sudden piling up of documents will lead to placing the records unorganized. The issue of lack of storage space was also mentioned by several participants. Patient who transferred from one hospital to another and changed their healthcare provider burden the challenges of tracing all the previous immunization records from other clinics or hospital. The narrative of the participants is that one of the difficulties they encounter is when the patient is new to them and the parent or guardian doesn't have the baby book with them. When this happens, this leads to a problem on the part of the pediatric consultants and the medical secretaries. The use of manual ways of keeping and retrieving immunization records pose so many problems in the accessibility and availability of these important medical files. There are a number of occurrences and events

where these records are misplaced and declared lost.

3. What experiences do the participants have on digital record management?

Research question number three sought to explore the experiences that the participants have on digital record management. Larger part of the participants does not have experience using digital record systems for keeping immunization records of their patients. The lack of experience by the majority of the participants can be deduced as the results of the slow progress of the Philippines in adopting these new innovations on technologies despite its promise of streamlined improved business processes. In addition, the unprecedented event brought by COVID-19 pandemic delayed the scheduled time for strengthening efforts to support Universal Health Care (UHC) in the Philippines that was supposedly accomplished in the year 2020. One participant indicated that she doesn't have any experience on digital record management despite being in the field as a consultant pediatrician for more than twelve years and recording patients' immunization records for a decade. Several participants have also shared that they don't have any experience with digital record management. They added that even though they had a gadget at work which was specified as the laptop, they never used it as a tool in recording their patients' immunization records. But some of the participants who have shared their experience with digital record management have stated that they were able to experience it from their previous work and not to their current institution. One of them stated that she was able to use the Electronic Health Record (EHR), one was able to use it for only a month due to unprecedented events and the other one was able to use it from her previous work in an NGO that specialized in childhood immunization. It is evident that participants of the study have inadequate experience on digital record management despite having not shorter than five years experience of recording patients' immunization data. Although three of them have experiences, it is reasoned that there is an existing lack of experience in managing patients' records through the use of digital technology.

4. What do the participants have in mind that may serve as a solution to the challenges in the record management?

Findings revealed that the majority of the participants expressed a positive outlook that digitization of record management is sufficient to serve as the solution to the challenges and issues expressed around the current record management. As Atkinson et al., (2020) asserted, having an electronic means to keep immunization records would mean more advantage on the part of the medical staff of a health institution. All of the participants mentioned their desire to transform the current record management into a digitized way. They see this as an improvement to the challenges in managing health immunization records. And stated several advantages the digitization acquired such as alleviate the chances of misplacing patient records, save time and storage room space, secured original copy, accessibility of records, and making the healthcare workers productive and efficient. Based on the aforementioned solutions of the participants of the study, it is possible to infer that digitization of health immunization record management is the primary solution the participants consider to the challenges in the current record management system. This is further strengthened by the study of Limaye et al., (2020), record management that utilizes digital technology can improve efficiency and productivity of business and services in many ways. In addition, the potential of technology in information-seeking processes, healthcare institutions could benefit from the use of online channels which may be a valuable tool for sharing medical and scientific knowledge to citizens.

5. How do the participants perceive the idea of a web-based digital record management system?

Research question five sought to determine the perception of the participants with the idea of a web-based digital record management system. Results showed that six out of seven participants perceived that it's already time to shift from paper-based record management to digitize record management. The only one participant who somehow do not accept digital record management system lamented disadvantages

of it such as the threat to data privacy security, the problem with internet connection and perceived it as a time-consuming task for the reason of unfamiliarity with the use of the system. Moreover, the study of Overhage et al. (2001) identified that the resistance of physicians to use Electronic Health Record (EMR) is another dilemma. It is due to the perception that EMR usage distorts workflows. For instance, entering data to EMT takes time, and physicians value their time. And the majority of the participants think it's already time for the clinics and hospitals to come up with a digital way of managing health immunization records as this will solve a lot of issue that are being faced in managing the patient record. This will also provide a lot of benefits for all healthcare workers. In addition to the advantages of digital record management system, American Immunization Registry Association (2017) authorized individuals such as patient, patient's legal guardian, involved healthcare providers will have the opportunity to access such data that contains personal information that must remain confidential. The responses of most of the research participants clearly convey that they have a complete understanding of the situation since they have been immersed in the pediatric immunization process for the longest time. They are also the ones who experience and hear the challenges of the parents and guardians especially when it comes to the complications of the situation concerning keeping and retrieving the vaccination records of their children or the child under their care. Since the pediatric consultants are the ones who could provide a potential answer to this problem, their idea of digitizing the immunization records is worthy of being considered especially now that other medical records are also using other advance digital platforms. This solution is one that could bring an end to the plight of the pediatric consultants and medical secretaries because they are looking into a platform that is efficient, safe, and easily accessible. These statements are supported and in line with Maurya's Value Proposition Model whereas the key answer is the result of the intersection of the uneasiness, predicament, and the potential solution as observed by the people directly involved in the problem.

Implications

The research has gathered enough literature which stipulated the importance of vaccination to people particularly to the young and vulnerable members of the populations. Because of this, the health workers put premium on how they are managing and safeguarding these medical records for the benefit of the patients. Following the Value Proposition Model and the AIDA Model, the situation that calls for a change and improvement of the current way pediatric vaccination records are managed led to the stigma which prompted the researcher to look for a potential solution that will enhance the way she serves their client, their patients. The researcher's view of the situation at hand created through the relationship between the experience of her colleagues supports an epistemological stance of proposing a solution which is modern and perceived as helpful in the field of concern. This view therefore has an impact both upon the way the researcher decides to obtain data pertaining to perceptions of health professionals regarding management of pediatric immunization records is brought about and how new knowledge from the research can contribute in making things better and easier. If implemented or given attention, this attempt to provide an answer to one of the most pressing concerns in the pediatric department will help pediatric consultants and the medical secretaries in ensuring that they are delivering efficient, fast, and accurate medical service to the people they sworn to serve.

This noble attempt of the researcher could be a benchmark to other departments who seek to improve the way in which they deliver assistance to the people they also serve. The approach in this qualitative exploration is data-driven and rooted to the actual problem at hand. In addition, this is just the beginning, the first phase of the researcher's vision of an integrated digitalized system which intends to provide the best possible healthcare service this country has ever seen.

Conclusion

1. As revealed in the study, pediatric consultants and medical secretaries follow only one way of arranging patients' records

which is through alphabetical order using the surname. Many clinics and hospitals still rely on paper-based medical records to document patients' information. The participants have also mentioned that they don't keep records according to their purpose.

2. All participants shared the same difficulties and sentiments when it comes to the challenges, they have in the current way they deal with immunization records. The paper-based record system is the origin of the other challenges mentioned by the participants such as the manual recoding is time consuming, there's a high prevalence of losing the records, the patient needs to restart all the immunization and it's costly and the space the paper record occupies in the hospital.
3. Throughout the pediatric consultants and medical secretaries' work experience, there continues to be issues of gap between those who have experience in digital record management and those who have not. Lack of experience in engagement with digital record management is evident.
4. Through the statements of the participants, findings can confirm that a common thing that has stood out among the answers of the participants of the study. Results showed that they support and are in favor of the use of web-based record management. However, some participants stated their worries for the privacy and security of the patient's information.
5. Finally, majority of the participants concur with the positive benefits for all healthcare workers and highlight that their efficiency and productivity will also be positively affected if the web-based immunization record system will be implemented. Some have shared their previous experience in using digital platforms in record management and guarantee that it's only logical to transform the current record management system.

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