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Abstract
Healthcare digital record (HDR) has become very common in the healthcare industry, and global information systems innovation has captured the attention of healthcare professionals. The current research objective is to discover how HDR innovation can assist healthcare professionals in developing HDR devices that suit their organization's objectives, and a quantitative research approach is proposed to help explore the objectives. This research discusses how management can introduce healthcare innovation in the healthcare industry and mentions system innovation, characteristics of innovators, how employees can improve innovative projects, and how the system development life cycle can be used to guide HDR innovation.

Key words: HDR. SDLC, global, management, organizations, IS, innovation, employees.

1. Introduction

As globalization becomes more prevalent in the world economy, the need for secure information systems (IS) is readily apparent. Effective IS are significant for successful business operations in cross-cultural markets. As organizations move their businesses globally, more systems are introduced to aid businesses and individuals in managing their operations. Some

types of IS are management information systems, decision support systems, expert systems, integrated information systems, executive support systems, and social bookmarking (Octium International, 2012). Researchers have discussed the positive impact systems innovation has had on organizations and the significance of IS innovation in shaping peoples' attitudes about the business environment (Gray, Parise, & Iyer, 2011; Melville, 2010). Hahn, Doh, and Bunyaratavej (2009) indicated that with an increase in cross-cultural business activities from the United States (U.S.) to global and international markets, adequate IS are essential for continuous growth in rising industries. With the expansion of global IS innovation, interest has been directed toward healthcare digital records (HDR) innovation.

HDR innovation has enabled healthcare professionals to deliver their services in a timely manner and has the potential to impact patient care operations (Davey, Brennan, Meenan, & Mcadam, 2010). For instance, electronic healthcare records are used to gather and store patients' data and care orders (Glaser, 2007). Cresswell, Worth, and Sheikh (2010) stated that the integration of electronic health records has been introduced as part of England's national healthcare program. In reflecting how healthcare organizations may benefit from HDR innovation, Siddiqi, Ahmed, Alginahi, and Alharby (2009) asserted that healthcare professionals should implement electronic technologies and should consider areas in their organizations that will benefit from electronic technologies adoption.

The current objective of this research is to discover how HDR's innovation from a global perspective can assist healthcare innovators, change agents, or manufacturers in developing HDR devices that suit organizations' needs. This research is significant because of recent media attention on HDR innovation. Other researchers have noted the importance of electronic medical records in medical information sharing, the benefit of using healthcare technological devices for affordable healthcare services, and how medical devices change over time (Ting, Tsang, Ip, & Ho, 2011; Coia, Downie, & Moir, 2011; Davey et al., 2011; Buchanan, Packard, & Bedau, 2011). In spite of the research contributions made by various healthcare researchers, little has been said about HDR innovation from a global perspective or international standpoint. The current study is intended for IS innovative leaders and provides different methods that management may employ to encourage employees to embark on various HDR innovative equipment in their place of work.

The paper is organized into nine sections; the second section provides a review of IS innovation; the third section discusses HDR from a global perspective; the fourth section mentions the theoretical perspective employed; the fifth section describes the SDLC application; the sixth section contains the proposed methodology procedures for gathering information; the seventh section contains the conclusion; the eight section mentions the authors' biography and the ninth section contains the references.

2. Information Systems Innovation

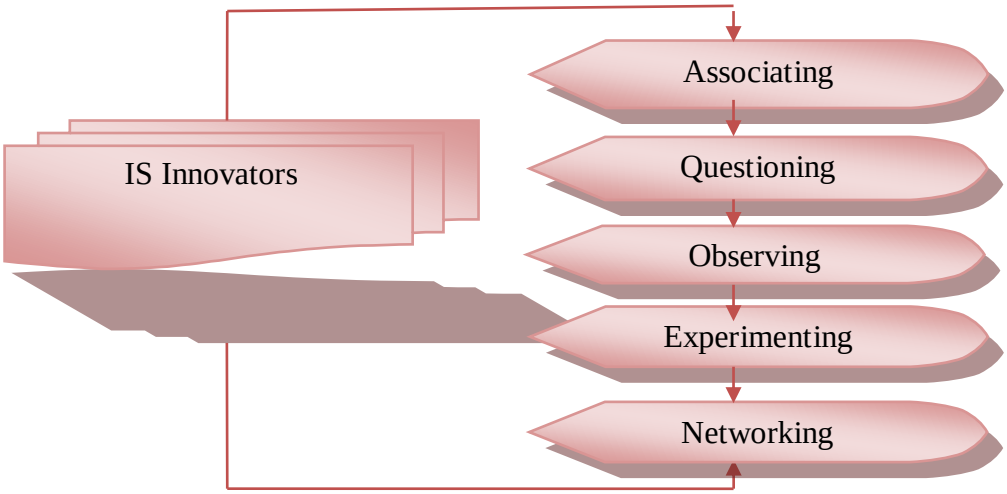
Many IS have proven their worth to professionals in several different fields. For example, leaders within organizations who invest in systems will have a major competitive advantage, increased coordination, and control in world markets. Computer vendors may benefit from IS by using their worldwide network to ensure that products designed in the U.S. are appropriate for customers throughout the world (Ives & Jarvenpaa, 1991). Lawyers may benefit from IS through worldwide office systems to prepare international contracts and eliminate time constraints. Large merchant banks may also benefit from systems through globally-integrated trading systems to assist in managing currency risk, which permits firms to operate in a virtual 24-hour

currency market (Ives & Jarvenpaa, 1991). Additionally, business professionals who operate businesses through Australian or Japanese subsidiaries located across international lines, may benefit from having extra time to conduct daily business with North American and European trading partners (Ives & Jarvenpaa, 1991). However, for IS users to continue to enjoy the benefit of using various IS, management needs to make certain that the organization is innovating appropriate systems that will help people and organizations achieve their objectives.

Management should exercise authority to ensure that appropriate innovations are occurring within their organization. Innovating IS without cause would not enable an organization to respond to the organization's mission and values. Management should increase awareness of systems innovation to ensure that systems meet the needs of their organizations. To ensure that the proper innovative IS are manufactured, Lyytinen and Rose (2003) asserted that management should look further than unidirectional systems concepts by alternating between different technological innovations. Alternating between two innovations will enable management to build systems and implement new ideas that will benefit the organization. When reflecting on organizational innovation, Burton-Swanson (1994) noted that change agents should be prepared for innovation by considering data administration, the information center, and material required for planning. Hence, manufacturers should consider organizational size and IS complexity when contemplating which systems to innovate (Lehman, 1985).

Other researchers have also noted different steps innovators should follow when innovating various projects. Dyer and Gregersen (2011) noted five potential behaviors exhibited by the best innovators: associating, questioning, observing, experimenting, and networking. In the association stage, the change agents connect problems with ideas from other fields that would facilitate the innovative idea. After the association has been made, the innovators ask questions that prompt ideas that may enable the enhancement of the innovation. For example, the innovators may ask questions such as, how would customers benefit from this innovation, or would customers be able to afford the innovative products? Once ideas have been prompted, the innovators observe everyone who would benefit from the innovation. During this process, the change agents also identify new ways to improve the innovative idea. After observing, the innovators then proceed to experiment with the insights that emerged during the observation stage to see if innovations are practical. The figure below helps illustrate the innovative behaviors.

Figure 1. Innovators' Characteristics

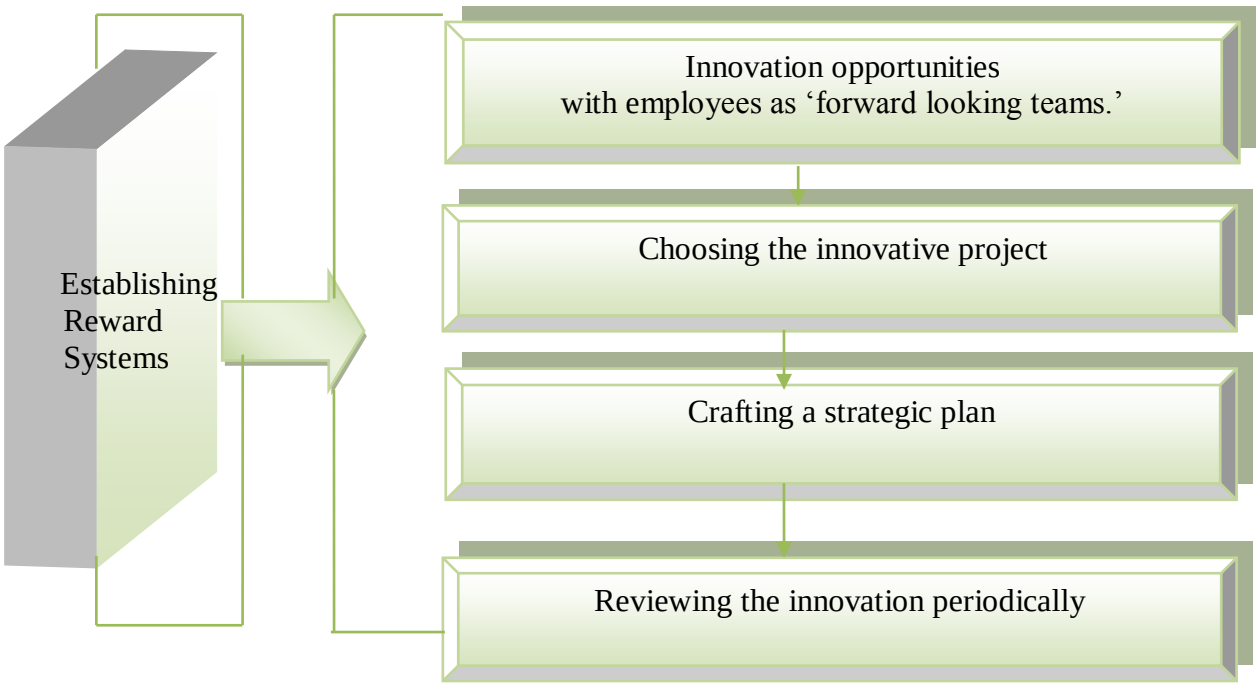


Networking is a vital part of organizational innovation. In order for organizations to be successful in innovative projects, management should create a network of employees with innovative ideas. By involving employees in IS innovative projects, organizational management can create new information and enhanced trust within the organization (Chatenier, Verstegen, Biemans, Mulder, & Omta, 2010). Management may invite employees to contribute to IS innovative projects through their input during IS staff meetings. Wilkinson, Dundon, and Grugulis (2007) observed how the history of a work environment and the manner in which practices are put into operation could significantly impact the project. By improving work relations and enhancing trust, management would be able to collaborate with employees on IS innovations. This cooperation would enable management and employees to envision innovative ideas that would benefit not only the organization, but the community as well (Ramiller & Swanson, 2003). Encouraging employees to contribute to innovative IS projects may cause employees to see themselves as valuable members of the organization.

In addition, encouraging employees' input in IS innovative projects would facilitate management to meet the needs of suppliers, customers, and other strategic associates (Dooley & O'Sullivan, 2007). Management may meet the needs of suppliers and other associates through employees' discussions about the various interactions employees have with other affiliates within the organization. Employees may also satisfy the organization's strategic partners by highlighting the IS products and services that the organization offers. The purpose of innovations within organizations is to enhance the quality of services and products provided to customers. When considering how systems are manufactured, Manchanda, Singh, and Dave (2009) asserted that innovators and organizational management should have total control over IS production, maintenance, and software configuration supervision. Considering that most employees interact with customers more frequently than some managers, employees are also more likely to identify which type of products and services customers may prefer and manage the innovation accordingly. If management does not consider employee input on systems innovation, systems projects may be discarded in the middle of production.

Dyer and Gregersen (2011) noted that to be successful in innovation, the change agent needs to work together with colleagues who are interested in innovation in order to implement the ideas generated. Three ways to think like innovators are *just do it*, *shake it up*, and *repeat* (Dyer & Gregersen, 2011). Instead of wondering if an innovation may be practical, innovators may choose to *just do it* to see if the innovation would be productive. After the innovation has been completed, innovators may choose to *shake up* the innovation or improve it. Innovators would need to repeat the thinking cycle to ensure valuable results. Innovators may also consider innovation as a project. The various ways of managing IS innovation as a project are illustrated in figure 2.

Figure 2. IS Project Management Process



To avoid IS development abandonment, systems managers should create an atmosphere in which innovators would be able to share their innovative ideas. IS producers may feel at ease sharing ideas based on the successful supervision of the innovation (Dooley & O'Sullivan, 2007). If the IS innovation process lacks proper supervision, organizational management may discover problems or errors in the finished products. However, situations may arise during the innovation process when employees introduce innovative IS ideas outside of set protocols. In such cases, management should consider the appropriateness of implementing the suggested ideas or permit employees to continue the innovations through an established process (Gilson, 2010). Even though the ideas may be beneficial, employee involvement may absorb significant time and other organizational resources, which may lead to reduced efficiency (Harrison & Freeman, 2004).

IS projects may be forsaken in the middle of development if management fails to outline the entire systems project. Goldfinch (2007) noted that 20-30% of all systems development are abortive, and manufacturers find themselves abandoning IS development in the middle of manufacturing. IS development may be aborted if manufacturers discover that the system may not be needed in the marketplace, if the systems lack proper supervision, or are not built as planned. IS developers should plan thoroughly to ensure their projects will be a success before executing the plan. In contemplating how users embarked on systems innovations, Sim and Wright (2002) observed that the manner in which people approach different IS problems would determine how they respond to IS innovation. While IS innovation may be seen as a mere task that requires only training on various IS, manufacturers have the potential of planning their IS projects more thoroughly if they are aware of possible problems that may arise in the process of development. IS developers should consider IS projects from different perspectives, and whether their knowledge regarding the project is sufficient, or if there is a need to invite outside IS

experts. Utilizing the help of IS experts would enable organizational management to innovate systems that would be beneficial in the healthcare industry.

3. Healthcare Digital Record (HDR) Innovation

As the world becomes more globalized, awareness is given to HDR (a type of IS) innovation because it has the potential of assisting organizations to lower costs and save time on healthcare delivery. Despite the benefits that come with HDR use, the lack of proper adoption may result in significant cost to the organization. When reflecting on HDR adoption, Dervitsiotis (2011) observed that an organization that chooses to use HDR should also be prepared to educate its employees on how to be adaptable to electronic devices. Organizational management could benefit from introducing employees to HDR by working hand-in-hand with HDR innovators. The joint force of employees and management will not only reduce costs of application features that may not be needed, but also show innovators how to build the systems properly. Additionally, before implementing HDR, organizational management should introduce the HDR technology to employees at an in-service meeting or seminar. The in-service should include a live demonstration of how to use the HDR. By doing so, the HDR users should not fall victims to malpractice caused by improper use of the electronic equipment, and the HDR would be built to suit the organizations' needs.

As IS innovators reflect on systems innovation, consideration should be given to organizations that are located outside of the host country. Systems manufacturers may embark on systems development based on some common features that are used in various healthcare systems. Considering every nation has its own healthcare structure, change agents should consider the common features that are used in healthcare facilities in other nations before including them in systems manufactured for a particular country. For instance, knowing that all Canadians are given free healthcare, it would be proper to build the IS that will be used in Canada in a manner which will not require medical professionals to input patient insurance information because the healthcare services patients receives are free.

4. Theoretical Framework

The system development life cycle (SDLC) is commonly used to organize IS innovation projects. The SDLC involves five stages: 1) preliminary investigation, 2) system study, 3) system analysis, 4) programming and implementation, 5) support, maintenance, and documentation (Verma & Jain, 2010).

5. SDLC Application

5. 1 Preliminary Investigation Stage

In the preliminary stage, the innovators contemplate which type of systems to innovate and how to carry out the production. The first stage contains an outline of the advantages and disadvantages of manufacturing the systems and determines if the system would serve its intended purpose. In regards to HDR, change agents may interview the potential users of the system to determine if the users' current systems have a deficiency. The purpose of the first stage is to make sure the same deficiency is not present in the new system.

5.2 System Study Stage

After the preliminary planning of the HDR has been conducted, the innovators may embark to the second stage of studying the systems. In this stage, the innovators reflect on how to address the deficits that are discovered. In order to be successful in carrying out this plan, HDR innovators will need to propose a written or verbal plan that will enable them to eliminate the deficits. One way to accomplish the task is by determining whether the old system will be able to function properly without the deficit, determining if there is an alternative to the deficit, and determining the cost of eradicating or enhancing the deficiency for the benefit of the system. When reflecting on system innovation, Moore, Nolan, and Guard (2006) observed that systems studies commence with the detection of deficiencies within a system that may be enhanced. After a thorough study of the HDR system, the innovators will be ready for the system analysis.

5.3 System Analysis Stage

The third stage of system analysis involves creating a blueprint for how the system is to be built. This stage necessitates innovators to determine how they want the system to appear in terms of its hardware and software and which features to include. The innovators may also establish which type of operating systems should be involved and address communications, programming, and security issues. Systems manufacturers may arrive at which operating system to use by researching the different operating systems available to them and determining which one will be a better fit for the types of systems they are building. Envisioning how effective an innovative system can be, Pollard, Gupta, and Satzinger (2010) observed that innovation involve projects and products focus that is concerned mainly with technological efficiency and elegance. Innovators may settle on which systems to employ based on the budget they drafted for the project. When innovators have decided the overall appearance of the system, they will be ready to develop the system.

5.4 Programming and Implementation Stage

The fourth stage of programming and implementation involves the building of the system. In this stage the manufacturer uses the blueprint in the previous stage to construct the system. This stage is significant because it will help innovators build the system as previously planned. If at any time the innovators choose to deviate from the drafted blueprint, they need to organize a new plan to show they are on a different track. The purpose of the plan is to make certain the innovators are building the system according to the set plan. The new components and programs that were included in the plan must be implemented and installed consequently. Innovators may choose to build the system to contain software security programs that will protect the system from illicit users (Larus & Hunt, 2010). Later on, the producer will train employees and management on how to use the system correctly.

5.5 Support, Maintenance, and Documentation Stage

After the fourth stage of the manufacturing the new system is ready to be use. Innovators may support the system by allowing the system users to test it in the fifth stage. Periodical maintenance is required to update the system regarding the latest adjustments and procedures and to avoid breaches by unauthorized personnel. For the launching of the system to be successful,

change agents may choose to shut down the old system completely so that the effectiveness of the new systems will be apparent. Innovators may also make a decision to run the old system in one computer and the new one in another to compare and observe both systems. After the testing period is over, the innovators document what they observe from the operation of the new systems. Pollard, Gupta, and Satzinger (2010) noted that the final stage of the project should integrate the SDLC with well defined and comprehensive requirements. Documenting the differences between the old and the new systems will facilitate IS manufacturers in establishing which plan to use for the study of HDR innovations.

6. Proposed Research Methodology

This research will implement a quantitative research design to gather the data because the research objective is to discover how global HDR innovation may assist healthcare professionals. Gelo, Braakmann, and Benetka (2008) mentioned that a "quantitative research requires the reduction of phenomena to numerical values in order to carry out statistical analysis" (p. 268). Hence, the software package SPSS 20.0 will be used to analyze the co-variance analysis or ANCOVA, with an alpha level of .1 will be used to compare the means.

6.1 Data Collection

This study will involve IS innovators who work for four organizations that manufacture HDR. Two of the organizations will have main headquarters in the United States (U.S), while the other organizations will be located in Canada. The U.S and Canada are used because they are among the countries that are heavily involved in the use of HDR (Hillestad et al. 2005; Ludwick & Doucette, 2009). The quantitative data will be collected using a survey method that contains fifteen questions.

6.2 Selection of Participants

Fifty participants will be used for this study. The participants will be selected based on their work responsibilities. Participants who engage in HDR innovations on a regular basis will be chosen for this research. The participants are to respond to the survey questions based on their job responsibilities. There will be eleven senior project managers, five computer analysts, and five HDR innovators. All other participants will be employees who are involved in innovative projects in the organizations. The demographics of the participants will be based on the type of various backgrounds of the employees, and the researchers will not be affiliated with any of the participants in the study; hence the responses received from the participants will be used in only for the purpose of the research.

7. Conclusion

This research contributes to the field of business in four ways. First, the research will help healthcare management and professionals understand the importance of HDR innovations in global and domestic markets. Second, the research will assist healthcare professionals and management around the globe with providing quality healthcare services by adopting medical technologies that are beneficial in meeting the needs of patients and communities. Third will assist healthcare professionals in achieving their organizational objectives. Fourth, it will assist

organizational management with applying the SDLC model to HDR innovations. Furthermore, Lin (2008) stated that organizational management should work hard to create a climate in which learning is appreciated and supported. To achieve this, management would need to establish procedures that will enable innovators to construct their ideas before manufacturing IS products. After an IS innovation is finished, managers should determine whether the finished project is user-friendly or if the systems would enable various organizations to accomplish their objectives. When reflecting on how real-life people can be used to test finished products, Fourie (2000) discovered that real-world clients can determine if IS would be effective and serve the intended purpose. Also, the system development life cycle (SDLC) will enable organizational management innovate HDR in a more effective and thorough manner.

8. Authors' Biography

Irikefe Urhuogo is a doctoral candidate at Argosy University, Atlanta Campus. Her concentration is on Information Systems Management. She holds an MBA degree and her research interest includes information systems control, quality, maintenance, and management. Some of her experiences include working with an organization where she oversees the work of over 30 employees.

Dr. Valerie Vann is currently a professor of Business at Colorado Technical University. She holds a Master of Arts in Organizational Management from the University of Phoenix and a Doctor of Business Administration from Argosy University with a concentration in International Business. Dr. Valerie Vann has over 25 years of leadership, management, and entrepreneur experiences. She has been involved in the operations of small and medium sized businesses, such as organizational management, business development, employee training, career and professional development, and real estate/property management.

Dr. Harish C. Chandan is an associate professor of Business at Argosy University. His research interests include distance education, organizational effectiveness, and innovation. He has over 40 publications including a book chapter and five patents. He has presented some of his work at the Academy of Management annual meetings in Atlanta, Chicago, and Philadelphia; International Academy of Management and Business conference in Orlando; American Culture conference in St. Louis; Academy of International Business, Southeast Chapter, Houston; International Journal of Business; and Economy and International Academy of Business conference in Jacksonville. Prior to joining Argosy University, Dr. Chandan managed product qualification laboratories for Lucent Technologies.

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