Exploring Areas of Improvement in IT Innovation Management in the Saudi Healthcare sector: Using COBIT 2019

Nada Alaqeel 1, Zahyah H. Alharbi 2

1 King Abdulaziz Medical city, Riyadh, Saudi Arabia
2 Management Information Systems Department, King Saud University, Riyadh, Saudi Arabia

Abstract – Many innovations have emerged in healthcare because of technological advancements in the sector. All these new and innovative technologies require good management practice within Saudi healthcare organizations. This paper discusses and investigates the current state of IT innovation management in the Saudi healthcare sector, focusing on potential areas for improvement using the COBIT 2019 framework. Nine staff from different Saudi healthcare organizations participated by answering interview questions that have been investigated and analyzed. Findings show initiatives steps were done toward innovation by the organizations. Even though not all healthcare organizations are at the same level, and they still need to do further works on innovation management. This is because they need to define clear and unified innovation processes that start from idea gathering until implementation closing. In addition to improving the innovation process by activating good documentation, enhancing human recourses, sufficient funding, and developing R&D.

Keywords – Innovation management, IT governance, COBIT 2019, health care.

1. Introduction

Saudi Arabia is experiencing fast population expansion in parallel with its development and renaissance. According to [1] the population is expected to reach 39.4 million people by 2030, causing an increase in demand for healthcare services. To address this challenge and others posed by the COVID 2019 pandemic, Saudi Arabia has created a Health Sector Transformation Program as part of the Saudi Vision 2030 [1].

This program covers four high-priority initiatives that assist the delivery of healthcare services [1]. Two of them are dedicated to developing national innovation and e-health solutions [1].

In response, many innovations have emerged in healthcare because of technological advancements in the sector. All these new and innovative technologies require good management practice within Saudi healthcare organizations.

Therefore, this paper discusses and investigates the current state of the IT innovation management in the Saudi healthcare sector, focusing on potential areas for improvement using the COBIT 2019 framework.

With this rapid growth in information technology and solutions, hospitals must have a well-defined management process in place for IT innovations. However, the IT applications and solutions are not always aligned with the enterprise strategy and objectives [2]. Furthermore, managing IT innovation is difficult and does not happen automatically.

Therefore, managing innovations require a framework that can help in identifying the best IT practices and processes. These frameworks can assist in aligning IT objectives with business objectives and ensuring effective IT governance and management [3]. This motivation has led to the development of the widely used framework, COBIT. [3]

As to our knowledge, there have been few studies on managing IT innovation in the health sector, particularly in Saudi Arabia. Hence, this paper will contribute by providing a comprehensive overview of
IT innovation management in Saudi hospitals from the perspective of IT management as well as outlining areas of improvement.

The remainder of this research is organized as follows. Section 2 provides a theoretical background of related concepts to the research subject including IT innovation, governance, and related literature along with the research gap that this paper will cover. Section 3 proposes the research methodology and design. Section 4 the analysis findings. Section 5 states the area of improvement for Saudi healthcare organizations along with suggested recommendations. Section 6 illustrates the research limitations and proposes further future related works. Section 7 concludes this paper.

2. Theoretical Background and Related Literature

2.1. IT Innovation in the Health Care Sector

2.1.1. Innovation overview

Various studies have different definitions of innovation as [4] found 60 different definitions of innovation in several fields. For example, [5] defined innovation as a developing process that focuses on replacing existing products and processes with new or improved ones by using advanced manufacturing technology to deliver a new product to consumers. However, [6] defined innovation as the successful way of developing the best ideas, work methods, or business models.

Furthermore, in an increasingly complex and changing environment, organizations must innovate to create value and maintain a competitive advantage [7]. Innovation can be accomplished through the development of new products and services, it can also be accomplished through the improvement of processes and procedures through the use of more sophisticated technologies [7].

Based on the foregoing, the innovation in this research will be represented as the practice of developing new products and services, as well as improving existing processes, models, and work operations. This is done to add new value, achieve higher standards, and increase productivity in a timely manner.

2.1.2. Innovation in healthcare

Healthcare is one of the most critical areas because it affects patients' health and safety. Due to population ageing and rising life expectancy, the innovation process in this socially significant field has become more critical and important [8].

As a result and due to the urgent need for innovation [9], the healthcare sector is open and receptive to new information technologies, modern solutions, and innovative start-ups.

Innovations are used to improve healthcare services, for example, generating a qualitatively new idea for treatment delivery or improving the management of healthcare processes [10]. Furthermore, in 2021, Saudi Arabia Vision 2030 was established to ensure the continuity of healthcare service development. The vision envisions reforming Saudi Arabia's health sector to make it more efficient by utilizing integrated and advanced systems and technologies [22].

Nevertheless, innovation has created new challenges for human resources in terms of the scope and nature of tasks, responsibilities, and skills. This is in addition to the accountability of governance of their diffusion, use, and settlement [11]. As a result, managing innovation has emerged as a critical strategic issue for healthcare [4]. This causes difficulty in adopting innovation in healthcare. One of the factors influencing innovation adoption is the regulatory framework, which can either restrict or promote innovation adoption [12].

2.2. Information Technology Governance (IT Governance)

IT Governance is defined as a set of processes and relationships that work together to maintain and improve the organization's strategies and goals by utilizing the organization's IT assets while ensuring benefits delivery and risk mitigation [13]. IT governance is a subset of enterprise governance that includes stakeholders who work on IT sustainability to support the organization's goals [14]. Governance is essential for defining how IT assets and resources are planned and managed. Stakeholders and human resources are included.

IT governance plays a significant role in adopting and managing IT innovation within the organization. An effective IT governance has a positive impact on innovations at both levels of product and process [15]. In addition, the initiated IT governance policies by higher manager influences how employees adopt IT innovation [16]. All of this allows us to concentrate more on IT governance and benefit from it. This is to ensure that investments in IT innovation yield the best results. Therefore, healthcare organizations can govern the innovation process through IT governance to ensure its alignment with strategic objectives, increase Return on investment, and reduce costs and risks.

Several IT governance frameworks have been developed to assist businesses in successfully managing their IT risks and assets, increasing
transparency and accountability, and ensuring that their information technology operations are aligned with their overall business goals. Such as COBIT. In terms of innovation, COBIT has a specific innovation process that serves as a guideline for organizations on how to manage innovation within the enterprise.

2.3. COBIT 2019 Governance and Management of IT processes

As previously stated, best practice frameworks have been developed throughout time. One of them is Control Objective for Information and Related Technology (COBIT). COBIT is a framework for governing and managing an organization's enterprise information and technology. It covers all information processing and technology implemented by the organization to meet its objectives [17]. It is not restricted to the IT division, but it includes it [17].

2.3.1. COBIT 2019 overview

The COBIT framework has been updated to version 2019. COBIT 2019 focuses on over 25 years of advancement in this sector, not only embracing new scientific findings but also operationalizing these ideas into practices [17]. COBIT has grown from its roots in the IT audit community to become a wider and more comprehensive IT governance framework [17]. It continues to establish itself as a widely recognized framework for IT governance [17].

COBIT 2019 was created using two sets of principles, according to [17]. As shown in Figure 1., the first set consists of six principles that outline the requirements of the governance system for an organization’s information and technology.

![Figure 1. Governance System Principles (Source: ISACA (2019))](image1)

The second set consists of three governance framework principles as presented in Figure 2., that are utilized to construct a governance system for the organization.

![Figure 2. Governance Framework Principles (Source: ISACA (2019))](image2)

According to [17], COBIT 2019 improved the previous versions of COBIT in several respects. For example, COBIT 2019 is more adaptable and open. Also, it is carried out to achieve a better match with the user's needs and requirements. Furthermore, COBIT 2019 achieves currency and relevance with the most recent IT concepts and standards, such as DevOps and Agile techniques [17]. Also, the capability and maturity models are more in line with CMMI [17].

2.3.2. The COBIT 2019 Governance System and IT processes

The governance system in COBIT consists of seven components as illustrated in Figure 3. that each business must develop to attain and accomplish governance and management objectives [17]. In this research, we are interested in focusing on the aspect of management objectives, which includes managing innovation. When it comes to management objectives, they are divided into four domains one of them is Align, Plan, organize (APO), Build, Acquire [17].

![Figure 3. COBIT Governance System Components COBIT 2019 (Source: ISACA (2019))](image3)

Focusing on innovation, COBIT 2019 has a management objective and process dedicated to innovation management, APO04, which is
categorized under the APO domain. APO04 is made up of six sub processes, which are as follows [18]:

- APO04.1 Create an environment conducive to innovation.
- APO04.2 Maintain an understanding of the enterprise environment.
- APO04.3 Monitor and scan the technology environment.
- APO04.4 Assess the potential of emerging technologies and innovative ideas.
- APO04.5 Recommend appropriate further initiatives.
- APO04.6 Monitor the implementation and use of innovation.

2.3.3. Related literature and studies

In terms of healthcare, there have been studies on IT governance and COBIT IT processes, but no mention of managing innovation. As in the study [19], they focused on the COBIT domains of Delivery and Support's DSS05, DSS09, and DSS10 processes. That was to ensure if the operational standard, for hospitals' procedures and information systems, can encourage the hospital goal achievement or not. Furthermore, [20] has described the current system process for the Public Health Service in relation to the COBIT 5 domain, and assessed its capability level. For evaluation, qualitative methods were used to evaluate some of the IT processes such as EDM 02, EDM 04, AP00 1, APO 06, APO 07, DSS 05, etc.

Unluckily, to our knowledge, the studies that mentioned innovation management in healthcare were few and outdated. For instance, [21] has assessed the current ICT situation and proposed suggestions for implementation improvement of ICT objectives in the public health sector in Mexico. Managing innovation was scored by using the process maturity model of COBIT 4.1. The assessment showed level 2 of maturity for innovation management which needs enhancements.

Finally, the above previous studies show a lack of focus on managing innovation, particularly in the healthcare sector. Furthermore, no study based on our knowledge was found that investigated innovation management in the Saudi health sector using the COBIT Framework.

3. Research Methodology and Design

This research identified possible areas for improving IT innovation management in the Saudi healthcare sector. Semi-structured interviews were performed for this purpose. It is achieved through focus groups and individual interviews with nine of IT healthcare experts. In a research that involves semi-structured interviews and content analysis, the sample size is frequently justified by interviewing individuals until data saturation is attained [22]. As a result, nine were sufficient. This research targets all government and semi-government health institutions in Saudi Arabia, whether they are a ministry, hospitals, or providers of e-health solutions. The majority of interviewees are IT graduates who work in health organizations in Saudi Arabia as illustrated in Table 1. Regardless of their positions, they are all working on either supervising or managing IT solutions in healthcare organizations.

The interviews did not collect any identifiable information and, therefore, the responses were anonymized due to ethical reasons. The interviews began with a consent statement. All interviews, however, feature predefined questions as well as questions raised during the interview depending on interviewee input. The interview questions were designed to elicit detailed information from the interviewees without bias. According to [23] interviews are beneficial when you want to ask people about their perspectives and acquire in-depth information. Furthermore, the previously mentioned COBIT 2019 innovation management practices (six subprocesses) were employed to construct interview questions. This is to compare the existing IT innovation management conditions to COBIT 2019 best practices.
For analysis, Thematic analysis was utilized to identify themes that link and assist in shedding the light on areas that need improvement. When seeking to interpret experience, thoughts, or behaviors across a data collection, thematic analysis is a suitable method of analysis [24]. The interviews were transcribed and analyzed using MAXQDA software. Areas that require development have been identified accordingly. All of the interviews, as well as the quotes extracted from them, were translated from Arabic.

In the end, the research provides a set of recommendations for enhancing the IT innovation management process in the Saudi healthcare sector.

4. Analysis & Results

As previously stated, APO04 consists of six sub processes [7], which are shown below. These sub processes were investigated during the interviews to illustrate the existing scenarios of IT innovation management in the Saudi healthcare sector.

APO04.1: Create an environment conducive to innovation

Government and semi-government healthcare organizations have different levels of a supportive environment for innovation. However, in all of these organizations, initiatives have been established to create a supportive environment for innovation. The APO04.1 sub process is concerned with developing an environment that considers innovation strategies, promotes an innovation culture, provides a solid infrastructure for innovation, retrieves ideas from employees, customers, and partners, and creates a rational decision-making structure to facilitate progress [17]. This results in having an innovation plan, as well as a recognition and reward program [17].

Some of the interviewees stated that their organizations have an innovation center where ideas from employees are collected. As a result, the innovation centers in these organizations serve as repositories of ideas. The organizations use these ideas to respond to existing issues. The participants reported that their organizations' innovation centers hold multiple meetings with representatives from each division, the purpose of which is to discuss ongoing concerns and current problems. Based on these considerations, the innovation centers review the collected ideas and apply them to the identified problems. In turn, they receive authorization from the committee to begin. The committee includes representatives from the requester division, innovation section, and partner, as stated by the interviewee. “We had work incubators to determine and agree on these ideas (agency representative, partner representative, and innovative center representative) (Interviewee #8, Personal Communication, October 4, 2021)”. Furthermore, the center focuses on promoting innovation through campaigns and empowering divisions to develop their innovation center and procedures.

The rest of the interviewees, on the other hand, reported that their healthcare organizations do not have an innovation center. They are only required to fill out templates dictated by higher management for ad hoc requests, where the project’s goals, requirements, and other relevant information are identified. “We have a case study to study the demand” “to study the problem, they fill a form, to look for an innovative solution (Interviewee #4, personal communication, October 16, 2021)” The aim is to assist management in making decisions. The decision-makers differ from one organization to another. Some healthcare organizations approve the ideas and prioritize them by the IT division before being escalated to the finance department for approval. This might expose the ideas to subjective selection based on people's perspectives instead of clear criteria, as stated by the participants. As indicated by the interviewee below:

“The issue has been subject to a personal opinion. For example, if I have a data platform and the market has many solutions. There are no committee reviews these matters (Interviewee #1, personal communication, September 29, 2021)”

“I don't know, they may have a different viewpoint, but when I come to link them to the strategic goals, I see them a little farther away. It may be subject to a personal judgment (Interviewee #1, personal communication, September 29, 2021)”

For organizations that do not have an innovation center, the ideas typically come from IT departments. These ideas are aiming to achieve accreditation or improve the organization's processes and systems. According to the participants, this approach may exacerbate the misalignment between the IT and medical divisions, leading to increased resistance from the medical side due to the fact that they are not included from the beginning and, therefore, may not yet be convinced by the new ideas.

Furthermore, the interviewees indicated that medical and non-IT staff are not sufficiently encouraged to express and submit their ideas unless the new solution becomes a need rather than an innovation. This may occur because of a hazy understanding of the idea-gathering process and its potential outcomes., unlike what happens in health organizations that have an innovation center. Although the collection and selection processes of the innovation center are clear, there are still some innovative ideas that come straight from other divisions and are escalated to the committee without
passing through the center. This results in the duplication of work, tasks, and roles. As clarified “The main problem is that there is a repetition in both work and tasks. Why? Due to those who study innovation, there is an aspect related to the environment, plus to operational aspect, monitoring, and control aspect that overlap with other Depts (Interviewee #8, Personal Communication, October 4, 2021)”

However, regarding the IT infrastructure in Saudi healthcare organizations, this infrastructure has improved over time because of the Saudi Vision 2030 initiative, one of the aims of which is to promote digital transformation [1]. Saudi Arabia has also made significant investments in its healthcare system, establishing healthcare infrastructures to improve the nation's health [25].

Saudi healthcare organizations also show an understanding of the necessity of innovation, where they have started to align novel and innovative ideas with strategic goals and objectives. As stated by the interview participants, healthcare organizations now are witnessing innovation outcomes that result in better performance and productivity.

Nevertheless, healthcare organizations must continue to focus more on developing a clear and unified innovation process and plan. It is also important for these organizations to encourage all stakeholders, including patients, employees, and partners, to suggest more innovative ideas for future assessment and implementation.

APO04.2: Maintain an understanding of the enterprise environment

According to COBIT 2019, organizations must maintain an adequate understanding of their current challenges, strategies, limits, and business industry drivers by interacting with stakeholders regularly [17]. This understanding helps in exploring new opportunities and the potential value added from adopting innovative IT solutions [17]. This also involves an understanding of investment parameters for innovation, which aids in developing appropriate organizational strategies [17].

Based on the findings of the interviews, it is apparent that Saudi healthcare organizations with an innovation center are maintaining this understanding by holding frequent meetings with divisions. The purpose of these meetings is to identify current constraints, challenges, and problems. Following this, the most suitable solutions are selected from the available bank of ideas. “We sit frequently with each representative agency for a one-to-one session. Then, we know what are the gaps exist in his agency, so we can give him from the Idea Bank in the Innovation Center (Interviewee #8, Personal Communication, October 4, 2021)”.

In contrast, Saudi healthcare organizations without an innovation center maintain this understanding by completing the required templates for each new solution suggested by the requesters, such as a business case, a problem and opportunity form, and a feasibility study template. This occurs after the individual departments evaluate the “as-is” condition and define how the healthcare organizations can arrive at the “to-be” situation. “as an agency, study the as-is and the supply and demand, study the feasibility. And determine how we can reach the to-be situation. (Interviewee #7, personal communication, October 18, 2021)”

As illustrated above, reviews of the existing environment's conditions in healthcare organizations are initiated by the requester departments, where the aim is to establish an innovative solution to the problems they are encountering and not the other way around. Thus, higher management in Saudi healthcare organizations must focus more on understanding the needs and opportunities by approaching stakeholders, rather than vice versa. The goal is to find unforeseen opportunities and problems.

APO04.3: Monitor and scan the technology environment

Under this process, the firm must establish technology monitoring systems that scan and search the external environment to identify new technologies and their potential value [17]. In terms of the internal environment, organizations must understand their appetite for innovation [17].

Some Saudi healthcare organizations typically allocate the responsibility of researching and scanning technologies to individuals. “Of course, we do not have the management for supervising and scanning of innovations technology, it is a personal effort. (Interviewee #2, personal communication, September 29, 2021)”. Only one of the interviewees reported that they have a research and development (R&D) section that handles the process of scanning for and capturing new and emerging technologies.

However, healthcare organizations permit individuals to contact different companies via RFI to learn about new trends. They also provide different subscriptions for consultant organizations, global companies, journals, and others. Certain health care organizations may coordinate site visits to innovation fairs, seminars, and conferences.

So far, as shown through the interviews, these efforts rest on the shoulders of staff, making them feel fully responsible for any decision they make. “This matter is a responsibility by the individual departments from A to Z, we have the authority to search for information, sometimes it is in excess. Because you don't want to bear the consequences of
this decision for yourself (Interviewee #1, personal communication, September 29, 2021)"

As a result, it will be difficult for staff to initiate and propose ideas. Also, the participants indicated that some of the information they have may be incomplete. “No, it needs an effort. They are not available; you have to see suppliers. Sometimes you have to make POC (Interviewee #1, personal communication, September 29, 2021)"

**APO04.4: Assess the potential of emerging technologies and innovative ideas**

This sub analyzes the identified new technologies while considering the potential risks of implementing these technologies, and how these technologies align with the organization’s architecture [17]. Organizations use this subprocess to guide the organizations on testing the new technologies and defining related issues and potential value by implementing a proof of concept [17]. It is necessary to define the scope, budget, desired outcomes, and responsibilities of the proof of concept as a part of the assessment [17].

According to the findings of the interviews, healthcare organizations are familiar with proof of concept and often implement it for sophisticated and innovative technologies that have never been used in Saudi Arabia. Despite this, it is difficult to put the proof of concept initiatives into action. This is because the implementation is dependent on the vendor’s readiness and financial offerings. As reported by the participants, not all vendors are willing to participate in free proof of concept initiatives, even if they are small in scale. “Of course, it depends on the supplier, if he offers a generous offer or something free according to what is available (Interviewee #2, personal communication, September 29, 2021)”

Another difficulty raised by participants was that some defined objectives of the proof of concept are unmeasurable or require a long time to manifest. According to the interviewee’s response to my question, if Proof of concept that you implemented, has clear goals and is measurable. “The POC for me only helps in choosing from the best company, but the value is difficult. Even in projects, the value is difficult to see in the first year. We need years to appear, the same thing in POC. (Interviewee #1, personal communication, September 29, 2021)” As a result, assessing the validity of some initiatives is challenging.

**APO04.5: Recommend appropriate further initiatives**

Based on COBIT 2019, the results of the proof of concept initiative must be evaluated and monitored through documentation, including identifying recommendations and guidelines for further innovation programs and trends [17]. This process includes communicating the innovation opportunities into IT strategy within the organization [17]. Alongside this, the organization may undertake follow-up work on the proof of concept initiatives to identify the actual investment and recommend appropriate further initiatives [17]. In addition, it is necessary to analyze rejected proofs of concept and communicate the reasons for the rejection [17].

The handling of rejected proofs of concept is frequently overlooked by Saudi healthcare organizations, where the issue typically does not receive sufficient attention. As per the interviews, certain participants believed that no benefits would be gained by focusing on rejected proofs of concept. For example, one interviewee stated: “As long as it doesn’t serve me and is rejected, why should I keep it with me? (Interviewee 6, personal communication, October 18, 2021)” However, some participants expressed an interest in documenting rejected proofs of concept, viewing this as a helpful way to establish lessons learned that can guide and influence future decisions. As one interviewee expressed: “But, in a colleague’s view, that I wish it would happen. You are supposed to have a record, that mentions the reasons for rejection to have knowledge data, to get benefit from them in the future. (Interviewee 7, personal communication, October 18, 2021)”

Noteworthily, no indications were received from the participants that Saudi healthcare organizations were actively leveraging proofs of concept and the associated lessons learned to improve their IT and enterprise strategies. This was particularly the case for those organizations that lacked an innovation center or effective communication with the strategic office.

**APO04.6: Monitor the implementation and use of innovation**

APO04.6 is the last subprocess for managing innovation, which is concerned with monitoring the implementation and use of innovation during the adoption. The purpose of this subprocess is to realize the promised benefits and capture the lessons learned [17]. Through this subprocess, organizations need to analyze the lessons learned, identify future opportunities and improvements, ensure good alignment between innovation initiatives and IT/enterprise strategies, assess the new technology, and identify the potential value of the adopted innovation [17].

According to the interviewees, healthcare organizations in Saudi Arabia are documenting the lessons learned in each innovation project based on project management practices. Some organizations will post the lessons learned on their corporate website or share them with higher management to facilitate improvements and minimize future failures.
For the rest of organizations, individual actors are relied on their perspective on how they will utilize these lessons. Individuals may tend to ignore them and rely instead on knowledge gained through experience. For example, one interviewee indicated that “yes, we can back to it, but it is varied from person to person (Interviewee 7, personal communication, October 18, 2021)” and other interviewees confirmed, “benefits of lessons learned are often practical, so you will have experience, so you will avoid it in the coming things (Interviewee 6, personal communication, October 18, 2021).”

To promote alignment between innovation initiatives and IT/enterprise strategies, the healthcare organization links them together in the first stages when they assess the new technology and seek approval. However, at the end of the innovation implementation, it depends on how the objectives were defined and linked to enterprise strategies. This varies based on the nature of the project and the accuracy of the information provided during the innovation submission. Unfortunately, as indicated by the interviewees in this research, the alignment is often met theoretically, although there is an improvement in aligning these innovation goals with the corporate strategy compared to the past years. “Now everyone when hears a project they link it to a strategic goal. Everyone believes in this story but not everyone will link them correctly. It’s met theoretically sometimes (Interviewee 7, personal communication, October 18, 2021)”. In conclusion, the interview findings demonstrate that healthcare organizations are taking initial steps toward innovation, and they are acknowledging its importance in the healthcare sector. However, as noted in the preceding analysis, several areas still need further work and more attention. Along with the challenges and weaknesses mentioned in thematic analysis, interviewees brought to the forefront additional themes that relate to needs and motivations for better innovation management, such as awareness, allocate resources, and providing budgets for innovative projects. As illustrated by interviewees in the following: “We need space, mentors, and resources. everything comes after the mentor. (Interviewee 9, Personal Communication, October 10, 2021)”

“The resources are few, even human resources, we are facing a lack of competencies, which can serve in this field, and a lack of knowledge, too. (Interviewee #3, personal communication, October 16, 2021)”

“The budget, that there are no budgets for innovation because most of them are operational and focused on people's health (Interviewee #4, personal communication, October 16, 2021)”

5. Areas of Improvement and Recommendations

5.1. Improvements and Recommendations

Based on the above analysis and assessment, healthcare organizations still need to invest additional efforts in managing their IT innovations. A series of improvements and recommendations are given below.

- **Ensure a clear and unified innovation process and plan**

Although healthcare organizations are beginning to focus on innovation, and while some are actively working to promote it, many still lack a defined plan and processes for innovative projects. As stated by some of the interviewees, “it always becomes an individual start, whether it is from IT or business, but there is a certain process that happens, I don't see that exists, unfortunately (Interviewee #1, personal communication, September 29, 2021)”. “There is nothing clear, that makes you know what to do in the first, second, and third stages to apply innovation in your department (Interviewee #3, personal communication, October 16, 2021)”

Furthermore, the current process was ineffectively promoted in some organizations since it was not published over the organization nor on their intranet. Additionally, some of them lack rewards programs that encourage innovation process adoption and the retrieval of ideas from all stakeholders, including clients, patients, and staff.

However, as advised by COBIT 2019 [17], healthcare organizations must have a defined innovation process and plan. Healthcare organizations are recommended to communicate how idea submissions are done inside their organizations by identifying the required documents, approvals hierarchy, and responsible committee. It would also be a useful idea to update the proposer about the status of their request. Furthermore, having reward programs in place could encourage employees to comply with the innovation processes and propose more innovative ideas. This recommendation is based on the fact that establishing reward programs is critical to enhancing employee engagement and fostering an innovative culture [26].

- **Approach stakeholders for better understanding**

Some healthcare organizations do not include medical professionals in the identification of innovations from the start, which leads to resistance and less participation on their part. To address the lack of coordination and alignment between the IT department and the medical side, regular meetings with medical stakeholders would be beneficial, according to COBIT 2019 [17]. It is also important to focus more on understanding relevant needs and
opportunities. In particular, approaching stakeholders can assist in identifying concerns and problems that were previously not recognized. It may also guarantee that IT activities are in place and correspond with business plans and requirements [17].

Good alignment between IT and business is essential for success and has an impact on an organization’s financial performance [27]. Furthermore, the positive impact of this alignment might enhance the influence of senior management IT expertise on innovation, leading to the further adoption of innovation [15]. This is expected to enable healthcare organizations to assess the current environment, particularly the question of its readiness for innovation.

- **Establish Research and Development Centers (R&D)**

Duplication in tasks and roles exist as per the prior analysis. Also, Individual efforts are being made to monitor and scan for new technologies and existing trends. According to the findings of the interviews, individuals may not have high motivation to propose new ideas. As explained by the interviewee “Because you don't want to bear the consequences of this decision for yourself (Interviewee #1, personal communication, September 29, 2021)”. This can happen due to the accountability of their actions and the uncertainty of some information. Having a R&D center will unify these efforts to scan for innovative solutions and relevant information. Furthermore, R&D frequently has a positive influence on the innovation and productivity of organizations [28], [29].

Significantly, the R&D is not just required for innovation; it also contributes to the growth of the organization’s knowledge base, which is critical in an uncertain environment [30]. Therefore, investment in R&D can have a positive impact on IT innovations within Saudi healthcare organizations.

- **Create better and more effective documentation**

Healthcare organizations must improve their ability to create and maintain effective documentation. As previously stated, most healthcare organizations do not effectively share and communicate the lessons they have learned with stakeholders and top management. They only present them to stakeholders without any further actions. They also often neglect to consider the lessons learned and outcomes of the rejected proofs of concept for innovation projects. Nevertheless, the lessons learned from both successful and failed projects can be valuable [31]. These lessons help organizations to enhance the performance of future projects in a systematic way [31].

According to COBIT 2019, organizations must analyze all lessons learned and then apply them to IT and enterprise strategies [17]. In addition, they should suggest further innovation initiatives and more improvements. To achieve this, healthcare organizations can facilitate the sharing of lessons learned through effective knowledge management. In particular, using knowledge management systems will help preserve individual information and transform it into organizational knowledge [32]. In turn, this will help enhance organizational performance [32] and improve project and innovation management.

- **Ensure role identification and resource development**

Roles and responsibilities in managing innovations remain ambiguous, resulting in task and work duplication. Therefore, healthcare organizations need to set up clear roles and positions for innovation management, prioritizing the avoidance of duplication and overlap with other organizational roles and departments.

Additionally, as revealed by the interviewees who participated in this research, Saudi healthcare organizations are suffering from a lack of human resources allocated for innovation. For this reason, as well as the fact that innovation usually requires a full-time workforce to investigate new technology and evaluate presented ideas, it is important for these organizations to allocate dedicated resources for innovation.

Furthermore, existing human resources within Saudi healthcare organizations are still in need of additional training in innovative technologies. Regardless of whether the employees are technical, administrative, or healthcare providers. The interviewees in this research believed that this kind of training for such employees would help to promote a culture of innovation and lessen resistance. “Training for the team is not enough, we need better training, like having workshops, seminars, and site visits for other organizations. (Interviewee#1, personal communication, September 29, 2021)”

6. **Limitations and future research directions**

6.1. **Research Limitations**

This research, like any other, has some limitations. For example, the research aims to explore areas of improvement, so the sample was small, and data was gathered through interviews. The participants were conservative; to protect the reputation of the organization to which they belong. Thus, it was challenging to acquire information regarding their challenges and obstacles in a way that accurately reflected reality. Therefore, having additional studies
using questionnaires to examine and confirm these research findings will be good for generalizing the sample to a larger population. Also, this research doesn’t involve actual observation of the nature of innovation management in health organizations. As real observation can shed light on topics that people in the sector are not aware of.

6.2. Future Research Directions

The results of the research provide contributions to the existing literature in the field of innovation management using COBIT 2019. This research is a first attempt to present the areas of improvements in managing IT Innovation in the Saudi healthcare sector. As a consequent result, interviews of healthcare staff were analyzed to outline the innovation management areas that need further works along with recommendations for improvements. These areas and recommendations can be examined in depth in future research. For example, further searches can examine the relationship and the impact of R&D, clear innovation process, or human resources allocation in innovation performance at Saudi healthcare organizations. Moreover, future research can be done to discover the motivations for better innovation management and its critical success factors.

7. Conclusion

In conclusion, this research provided an overall understating of the current conditions of IT innovation management in the Saudi health sector, in addition to comparing them to the best practice of COBIT 2019. Nine staff from different Saudi healthcare organizations, gratefully participated by answering interviews questions that have been investigated and analyzed.

As a result, findings showed initiatives steps were done toward innovation by the organizations. Even though not all healthcare organizations are at the same level, they still do further work on innovation management. They all still need to define clear and unified innovation processes that begin with the idea gathering until implementation closing. All of them are also needed to activate good documentation and improve human recourses and develop the R&D.

References


