Digital resource Orchestration in Healthcare: The Case of Västra Götaland Region

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Abstract

Resource orchestration is seen as a key element of IT governance and is advocated as a critical mechanism for digital transformation. Given the current trend of digital transformation it is imperative to have in place good IT governance practices to create value through IT investments, manage IT risks, and provide IT assurance. There are shortcomings in the implementation process to turn Health IT (HIT) investment into tangible benefits. HIT staff at different managerial levels in the Västra Götaland Region (VGR) in Sweden, were interviewed to understand how they orchestrate digital resources. The findings showed that they are already carrying out digital resource orchestration actions to keep abreast with the digital transformation. They have put in place a governance and organizational structure on top of prioritizing innovation. The contribution is in the identification of resource orchestration actions carried out by HIT staff at various managerial levels in VGR healthcare organizations.

1. Introduction

Resource orchestration is seen as a key element of IT governance and is advocated as a critical mechanism for digital transformation. Given the current trend of digital transformation it is imperative to have in place good IT governance practices to create value through IT investments, manage IT risks, and provide IT assurance. With the evolution of technology in various areas, we see that information technology has become the backbone of organizations to the extent that some of the organizations would come to a ground halt without information technology. It is now impossible for business executives to delegate or avoid IT decisions [1]. The board of directors, through management, should guide an institution in fulfilling her corporate mission as well as protect its institution's assets. This is termed governance and effective governance is realised when the board gives proper guidance to management regarding the strategic direction for the institution and oversees management's effort to move in this direction [2]. IT governance is about those who have input and are entitled to making major decisions and ultimately those accountable for implementing those decisions [3]. They emphasize that taking the time to design, implement, and communicate IT governance processes to senior management is worthwhile and bears results.

In a digitally intensive world, organizations operate in business ecosystems that are intricately intertwined. As such digital resources should be viewed relatively broadly since they transcend traditional resources to include technology and digital services. Digital infrastructure consists of institutions, practices, and protocols that together organize and deliver the increasing power of digital technology to business and society [4]. Resource orchestration is concerned with the actions leaders take to facilitate efforts to effectively manage the organization's resources [5,6]. Managers at the different levels in the organization influence organizational performance by structuring the organization's resource portfolio, bundling resources, and leveraging those resources in the marketplace [7,8]. When knowledge resources or the specific expertise possessed by individuals is in a given domain in this case healthcare, mobilization and coordination are particularly useful [10]. In the healthcare sector where there are many stakeholders and valuable knowledge can be guaranteed within individuals and so social complexities complicate its leveraging [11]. The challenge now becomes how to get the individuals understand their shared purpose as well as cooperate in pursuit of that purpose in order to effectively leverage the knowledge resources. This is key component of resource orchestration.

The study investigates the resource orchestration phenomenon in healthcare organizations in order to contribute to the IT governance field. This research is guided by the following research question.

How can digital resource orchestration actions of Health IT (HIT) staff at the different managerial

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levels inform the design of improved IT Governance within healthcare organizations?

The central contribution of this study is to identify the resource orchestration actions at the different managerial levels in healthcare organizations using the resource orchestration framework as the theoretical lens. Empirical research was conducted to identify the most effective locus of resource synchronization. The empirical contribution in this study is important to the literature given that most work has either been conceptual [8,9] or focused on mobilization or coordination [12,13].

2. Precursory findings and positioning of research

The digitalization of healthcare (DoH) has been an on-going dedicated strategy since the 1970s in Scandinavia [14]. Digitalization may refer to enabling, improving and transforming business operations or processes by leveraging digital technologies and a broader use and context of digitized data turned into actionable knowledge with a defined benefit in mind [15]. DoH can be attributed to the society structures like the personal identification numbers, universal healthcare for all citizens, and established societal structures for handling taxation systems in some countries. As such, designing large information systems in healthcare is doable and realistic. Exploring and unpacking the information infrastructures for healthcare in Scandinavian countries provides insight into the core complexities of standardization, flexibility, dynamics, coordination, and connectivity relevant for resource orchestration research [16,17].

In many organizations today, there is pervasive use of IT which is necessary in the support of processes, sustainability and growth of the organizations. [19] states that IT governance is made up of leadership, organizational structures and processes. These are able to guarantee that IT sustains and extends the organization's strategy and objectives [20]. As many organizations shape new strategies, IT governance is high on the priority list for many organizations including healthcare organizations [18,21].

2.1. IT Governance

It is not clear from literature when the new challenge of IT governance began, however many organizations have taken it on seriously as a challenge that needs to be discussed and remedies devised for the issues raised [22]. Most of the organizations that took on the IT governance challenge implemented it in order to merge business and IT, and as a means of having senior managers get involved in IT decision making. These decisions include how much to invest in IT in terms of infrastructure, hardware and software.

[23] state that the use of IT governance best practices is different in the various sectors. They focus on the financial sector which they say was among the first sector to use IT in its operations and thus is mature. The argument of maturity from the financial sector is supported by [24]. This paper focuses on the healthcare sector with an objective of understanding how HIT staff carry out resource orchestration actions to inform the design of improved IT governance.

COBIT is a tool that organizations can use to help them align the business with the IT processes. It is therefore important that managers and users benefit from the development of COBIT as this will help them understand their IT systems and decide the level of security and control needed to protect the organization's assets through development of an IT governance model [25]. [26] states that COBIT and ITIL assessments can be used to audit and identify IT governance weakness and opportunities. He further argues that the processes in the organizations can reveal IT improvement priorities. Furthermore, [26] used the IT governance standard ISO/IEC 38500 to provide guiding principles to effective use of IT while setting up the IT governance initiative at the hospital Sao Sebastiao according to the Calder-Moir framework. IT governance focuses on systematically determining who makes each type of decision, who has input to a decision, and how these people are held accountable for their role [3]. Some guiding principles include, evaluation of the current and further use of IT, direct preparation and implementation of plans and policies to ensure that the organization's objectives are met from the use of IT and finally monitoring conformance to policies and performance against the plans [26].

Encouraging and leveraging the ingenuity of all organizational personnel in using IT may lead to the desired IT governance. At the same time this leads to compliance with the visions and mission of the organization.

For healthcare organizations, [27] posits that IS investment is by default necessary. Therefore, evaluating the consequences of IS investments is paramount and has to be done. Little is known though about how senior management determines how much to allocate to the IS function in the face of competing priorities [27]. However, [28] and [29] highlight how investment decisions in IS are made.

In order to assess the business value of IS, it is imperative that IS researchers understand what motivates senior management into deciding on IS investment. When it comes to practice, funding for the IS function to realize IS initiatives is based on senior management [27]. Given the criticality of the healthcare sector, [30] suggest that healthcare organizations can adopt IT to provide quality improvement at reduced costs to an organization. Designing proper IT governance in healthcare with the help of available tools is therefore necessary.

[31] posits that the digitization process has not been smooth in the healthcare sector like in other areas. Having in place a good IT governance tool can help provide the right information to senior management for decision making. The design of IT governance for organizations, depends upon a range of conflicting internal and external factors within the organization (ibid). Being able to determine the right match of mechanisms is an uphill task. Moreover, if the right match is found for a particular organization, it might not necessarily work for another organization.

2.2. Resource orchestration

The background of not ably managing the implementation process to turn HIT investment into tangible benefits creates a gap. This gap could be bridged by carrying out resource orchestration (RO). RO is concerned with describing and examining the roles of managerial actions during the process of structuring the resource portfolio, building relevant capabilities through bundling, and leveraging on these capabilities as an organization to realize a competitive advantage [8]. The resource orchestration framework [9] is a result of integration of the resource management framework and the asset orchestration framework. The only difference is that the resource management framework draws on the Resource Based view (RBV) and has been explicitly linked with RBV's primary logic while asset orchestration draws from the concept of dynamic capabilities. The resource management's treatment of resource divestment and the strategies for resource deployment are lacking from the asset orchestration arguments. The detailed types of bundling actions are also lacking. For instance, issues to do with business models, organizational and governance structures, and innovation are not reflected. In regard to managing resources strategically, resource orchestration addresses the actual role of the manager during the process [9]. The resources include the organization-controlled assets, capabilities, processes, attributes, information, and knowledge.

The complementarities of the resource management and asset orchestration frameworks suggest that integrating them will facilitate research of managers' actions within capability and resource-based logics. In support of the integration, they came up with the term resource orchestration and ultimately a resource orchestration framework (Figure 1). To further explore the integration and develop a research agenda for the two frameworks, [9] address issues not previously considered including the organization's breadth (scope of the organization), depth (managerial levels within the organization) and the life cycle. They provide a road map for further research in resource orchestration. The empirical study within the Västra Götaland Region (VGR) in this study focuses on the resource orchestration actions carried out in the organization's depth by HIT staff at the different managerial levels in the organization and how they can inform the design of improved IT governance.

Figure 1. Resource Orchestration Framework (Adapted from Sirmon et al., 2011)
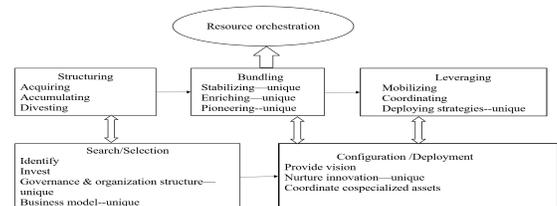
3. Method

The case study approach is adopted particularly because it is suitable for answering the "How" question [32]. It permits researchers to understand the nature and complexity of the processes taking place in a given environment [33]. Given the limited knowledge of the resource orchestration perspective as an emerging field, [34] it is necessary to develop theories to explain resource orchestration practices. Case study methodology helps in effectively building new theories [35]. Furthermore, case-based research permits researchers to investigate the phenomena of interest, embedded in specific contexts [32]. As such the case study approach was considered for this study. The aim is to understand how the HIT staff in VGR healthcare organizations orchestrate digital resources as a key component of IT governance.

3.1. Empirical selection and description of case

Västra Götaland Region (VGR) was selected on the basis that it is a relatively big organization and is a driving force for development in western Sweden. The region collaborates at many levels with academia, the private sector and other public organisations. Besides, VGR is an active partner in the EU with a track record of many successful IT related projects [36]. However, the challenge has been that the successful IT systems but particularly health IT systems served/serve only a given county council and up to today still serve individual county councils within VGR. As such, digital resource orchestration is difficult and this is a limiting factor to the digitalization of healthcare services. Given those limiting factors makes VGR a good case to study in order to come up with theories of digital resource orchestration.

One aspect of Västra Götaland Region's main mission is to ensure that the population in Västra Götaland has access to good medical care among other missions. Another thing to note is that Västra Götaland Region is a politically governed organization. This points to the various decision-making levels. Given that IT governance is about who is entitled to make majors decisions, who has input and who is accountable for implementing those decisions, the hierarchy in VGR could affect the IT governance.

3.2. Data Collection

Data collection was carried out in two phases. In the first phase selection of suitable secondary sources of data from sources like the VGR website and a web search for newsletters regarding healthcare initiatives in VGR was done. The information gathered from the secondary sources served to enhance the pre-understanding toward the unique aspects and pertinent issues of VGR. This provided a basis for the choice of the interviewees. In the second phase interviews were carried out with HIT staff, IT managers and clinicians at different managerial levels within VGR healthcare organizations. An initial guide to design the interview questions was based on a combination of both the secondary data and the relevant literature. To allow for emergence of new constructs, some level of openness was maintained allowing the interviewees to speak even out of the bounds of the question as long as they felt it was relevant to the topic of discussion and also to the development of the theoretical lens [37]. The

adoption of the resource orchestration perspective and the collected secondary data enabled an initial theoretical framing [38] which was a guide for subsequent interviews and case analysis.

Data collection through interviews was conducted amongst VGR's HIT staff, business managers and heads of healthcare departments/funds. Different digitalization initiatives implemented in VGR were reviewed. Interviews were conducted with 10 informants (see Table 1). The interviews took on both unstructured conversations and structured questions to guide the discussion. The interviews lasted between 45 to 60 minutes. During the interviews, interviewees were asked to introduce themselves and then share about how they have been handling the delivery of healthcare services amidst the digital transformation. At the end of the interview they were requested to suggest other potential interviewees which augurs well with the snowball sampling method, regularly used by case-based researchers as external interviewers can have difficulty in identifying the right informants [39].

All the interviews were digitally recorded and later transcribed. The interviews being the primary source of data were supplemented on the other hand by informal and conversational interactions from colleagues (Swedish natives) at work and other social gatherings in order to understand what happens in the healthcare organisations in VGR. The resulting discussion corroborated some of the issues that were raised during most of the interviews. The participants involved in the interactions are beneficiaries and therefore stakeholders of the healthcare systems managed by the VGR HIT staff.

3.3. Method of Analysis

The analysis of data was done following the deductive framework approach [40]. Using the resource orchestration framework [9], examination of the findings was done. The results were presented using the three components of the resource orchestration framework. During the analysis, moderate literature review was done in regard to the resource orchestration framework. The themes were developed from the framework as well as from thinking about the data and creating links from the understanding derived [41]. The categories that emerged included: enriching, pioneering, and coordinating, mobilizing, and integrating resource to form capabilities. Others included stabilizing, acquiring, accumulating and divesting resources as well as provision of vision and nurturing innovation. The categories were related to the components of the resource orchestration framework which include

structuring, bundling and leveraging. Analysis continued in order to refine the themes and come up with clear definitions and names of each theme. The last opportunity for analysis was done while compiling the results. A selection of vivid and compelling extract examples relating back to the research question and literature was done to help produce the results.

4. Results

This section presents the results from study that are presented using the key components of resource orchestration framework (as described in section 2.2).

4.1. Structuring

What is clear from this study is that there is a deliberate move by HIT staff and management in VGR to form a new and technologically complaint resource portfolio. There has been coordination among the various county councils which will lead to sharing of newly acquired resources as well as support the procurement process of standardized IT health systems. The Strategist and Enterprise architect in their submission stated that:

Table 1 showing informants' organizations and designations

Organisation	Designation of person interviewed
Innovation Fund	Head
Goteborg Business Region	Area IT Manager
Sodra Alvsborg Hospital	IT strategist/Radiology
Västra Götaland Region	Strategist and Enterprise Architect
	Strategic Architect
	eHealth Expert/Radiology Nurse
	Head Care Digitalization/Retired Medical Doctor
	Digitalization Strategist
	Chief Standardization officer
Lindholmen Science Park	Programme Manager PICTA

'*It was this procurement project for which they needed to change the Lab system and they realised that it was not possible to do the migration in 8 months so they raised it in the regional steering committee for the project which comprised of members of the steering committees of individual labs in the region.*'

This is an indication that decisions for digital resource orchestration actions are taken collectively. Top management highlights what they want to achieve and then allow the experts who are normally at the middle and operational levels to advise on the procurement of IT health systems. The centralized/regional procurement of standardized IT systems and equipment will therefore eliminate the problem of information sharing and interoperability that have been a perennial challenge in the region. Like the standardization officer stated: '*For our case, the politicians set aside some money for the project. Then there is the steering committee and project manager which is the team that decides what should be purchased. In case where the amounts involved are so high out of the stipulated budget, then we go back to the politicians*'

Given the above responses we noted that there is support from the county councils, the hospitals' management and political leadership in the bid to acquire new and adaptable healthcare information systems, accumulating resources such as sharing the resources of the talented individuals from some county councils to help other county councils. In the search/selection of resources, the governance and organization structure has enabled decision making starting from the lower managerial levels and going up the hierarchy. As noted by the standardization officer: '*we see the business request and from that we see what kind of standard will be suitable for them and that is part of my role to do that*'. IT Investments are done as a region following initial agreement by the county councils that follow the information model. An important resource orchestration action is divesting of resources, for example old systems need to be replaced with better and more technologically up-to-date systems in the bid to achieve improved efficiency. One of the IT Strategic Architect pointed out:

'*We see that the old systems, don't work in an up to date context where we have for example doctors sitting in one hospital and operating the diagnostics on another patient in another hospital. This was noted because hospitals are short on staff both nurses and doctors who are hard to find in Sweden these days*'. VGR is a growing organization and has chosen to identify and invest in the right resources while forming the resource portfolio. During the investing

process, VGR is mindful of the fact that the process of divesting needs to be done in phases. As stated by a standardization officer:

'*A lot of people in healthcare in Sweden and many countries don't realise what systems they are buying. They often times buy and inherit an information model that causes the organization a lot of trouble when it comes to interoperability because it can't be changed or customised. But the step we took is we put the most effort in defining our information model, how the data should be structured. By doing that it is simpler to connect our systems to other systems.*'

The problem with most of the systems built was that they were based on personal opinions and not international standards. This is one of the causes for failure to exchange data among the systems. One of the strategic architects who is part of the process of getting a new information model stated:

'*I would say we lack some kind of connect environment. The background makes it isolated islands. We have something for primary care, for the hospitals and county council care and they are not interlinked. One thing is also the lack of governance when it comes to informatics*.'

In VGR, there is an informational model in place to help in the governance of IT. It is a guide that is now followed during the procurement process of IT infrastructure. Managers in VGR consider identification and investment decisions very important and necessary resource orchestration actions in healthcare organizations.

In the bid to nurture innovation, science parks have been set up as initiatives with academia. For example, the Lindholmen science park [5] and the Sahlgrenska science park. Further support for innovation is channelled through the innovation fund which started at Sahlgrenska Hospital. It is a purely innovative and development project open to collaboration between academia and hospitals.

The head innovation fund stated that there is support from the county council towards innovative ideas of how IT can support the doctors and nurses. He further stated that decision making happens at the top level but the ideas begin at the operation level as evidenced in his statement that follows:

'*The county councils want to support innovation in the region. So, they look out for ideas that the nurses and doctors come up with in their departments and see how IT can be used to create solutions. The key thing is how can they innovate? Moreover, for the first time we have this opportunity and the politicians have approved 20M SEK this year (2017)*'. The findings show that there are already ongoing digital resource orchestration actions aimed at supporting the digitalization of healthcare.

4.2. Bundling

In VGR hospitals, there are quite a number of old systems that are still in use due to their usefulness and nature of data that they hold. However, there is a challenge of trying to have these systems work with new systems majorly in the area of trying to retrieve data from the old systems by the new systems as stated by an IT strategist and Enterprise architect:

'*There are two modes, mode 1 getting old systems to work—getting things to work right now that is maintenance. The old systems from the 80s have to run since they are still in use, they have to run and cannot shut down so we have to have the backups and the mode 2 we have the innovation mode*'

What is worth noting is that there are minor incremental improvements to existing capabilities as well as enrichment which extends current capabilities. For example, there has been creation of APIs for the old systems as a means of getting information from the old systems for use in the new systems. One of the informants a standardization officer noted that:

'*In some cases, we have the same space for radiology, cardiology, dentistry and we use the same infrastructure which was developed over 10 years ago. When it comes to pathology we have specific space given the original data and amount of data on the one hand but also due to the high demand for pathology data to help in the pathology process. The shared space is seen as a single space by the user since the space has been created out of global standards*'

There is a deliberate move to integrating resources to form capabilities through minor improvements to existing capabilities, and creation of new capabilities. There are ongoing projects under the Innovation Fund in VGR and they are aimed at creating new capabilities in healthcare. For instance, one of the projects aims at trying to reduce on the healthcare professionals' work by having the patients to share their information on a daily in real time. This was noted from the interaction with the head innovation fund in which he stated:

'*For example, patient related apps that are being worked on, include a solution where the patient can manage their sickness, using a measuring device like a T shirt that has sensors for Parkinson disease and sends real time information to the doctors about whether the patient has taken their medication and also the shakiness levels, blood pressure and other relevant measurements.*'

The head Care Digitalization was keen in getting to see how the HIT staff are able to make use of IT to

help them improve in the way they offer healthcare services. He stated: *'We can also use our experts in a more efficient way via new technology, video and the Internet of Things (IoT) solutions to enhance those possibilities. I think that the problem is all our governance structures are still as they were in the 1600s and we need to have a huge change in our governance structures'*

The incremental improvements and extending of current capabilities are resource orchestration actions that are already happening in VGR. The creation of mode 2 systems and having an informational model in place are resource orchestrations actions that have been adopted. In support of this an IT Strategist stated that: *'There are so many rapid and complex changes happening at the same time'*

There is already a shared storage space for the various data from the different medical disciplines that is cardiology, radiology and so on. This creates easier sharing of data.

4.3. Leveraging

There is need to provide a plan for capabilities needed to form requisite capability configurations as well as coordinating the integration of capability configurations which leads to deployment of systems or strategies used to exploit capability configurations formed by the coordinating sub process. VGR is already on the right track and has a model in place to steer the entire IT in the region. This is corroborated by one of the object leaders at one hospital in VGR noted that:

'The region has a model of how to steer the entire IT in the region, I am a part of this and that's my task is for the entire region'

The model in VGR takes into consideration all the technological advancements and therefore puts strategies in place that are able to take advantage of the available IT opportunities within the healthcare organizations. This is exactly what leveraging is all about. It exploits the organization's capabilities and takes advantage of the market opportunities. For instance, VGR has taken advantage of the digital transformation and the support from the county councils in the region

towards realizing the digitalization of healthcare. VGR has in place an annual healthcare investment budget. This is a step in the right direction and indicates the willingness by the management of VGR to support innovations in healthcare. Already most HIT managers of county councils in VGR are happy to cooperate with each other to avoid the current challenges of information sharing they are facing currently. This makes it easier to add new systems or

devices on the existing systems without making critical changes. This is corroborated by the Chief standardization officer who stated:

'Regularly it is about 200M SEK in a year for healthcare but currently we are in a phase where we are looking for the future healthcare environment. It is a huge business deal which will require a single investment of a couple of billion SEK and it will have brand new thinking. It will cover most domains and we will replace our current electronic patient records (EPRs).'

Leveraging involves a sequence of processes to exploit an organization's capabilities. From the interviews it was clear that most of the HIT staff were very much willing to come up with innovations so as to realise efficiency in healthcare services. As noted by an IT strategist: 'We are too slow, we are very good at maintaining the old EHR system, but these innovations things we pretty lacking on the IT side. We need to be better on that side and there is some effort especially on the IT side to get better. We are looking at our capabilities and trying to see what we are lousy at and how we can improve. Three things; strategies, getting everything together and be better at innovations.' There is increased coordination between the clinicians and HIT staff of the county councils. The programme manager PICTA [46] stated that: 'In order to benefit from the advantages that come with technology, there has to be close collaboration between the healthcare professionals and health IT staff who provide healthcare solutions'

This is evidence that the healthcare organizations are out to look out for new ways in which they can use IT to improve the healthcare services.

5. Discussion

The study outlines how digital resource orchestration actions are carried out in VGR across the managerial levels. Drawing upon the process of resource orchestration, this study works to advance the current knowledge. The key aspects that have contributed to the resource orchestration actions are an improved governance and organizational structure, deploying new strategies and nurturing of innovation in healthcare organizations. Using the resource orchestration framework, the above-mentioned aspects are used to explain further how digital resource orchestration actions are being carried out in VGR.

An improved governance and organizational structure

There is a change in the governance and organizational structure which has taken care of issues mainly to do with standardization and sharing of information. Most of the county councils have had their own governance structures in which they decide internally on what to procure and deploy or implement. The coordination between the county council governance structures will guide all future procurements of HIT systems in the region guided by the information model. This will enable connection of systems and sharing of information within the region. With an improved governance and organizational structure in place VGR will only get better at innovation and mobilizing of the existing capabilities [9]. The resource orchestration actions currently undertaken will simultaneously address capability strengths and weaknesses in order to realise efficiency and innovation [42].

[43] in their framework state that asset orchestration consists of two primary processes. Under the search/selection, new aspects of the governance and organization structures have led to decision making takes place at various managerial levels and finally an agreement is arrived at amicably. Subsequently, there is coordination among the county councils which leads to sharing newly acquired or accumulated resources.

Deploying of new strategies
The configuration/deployment process has seen the top managers highlight what they want to achieve. For example, the Head Care Digitalization is interested in having the clinicians share with HIT staff what they would like them to do to improve their efficiency. This is spot on as the HIT staff are also ready to be close to the clinicians to provide the needed support. The standardization officer has done the same as well by having in place an information model which will guide the procurement of HIT systems.

The resource portfolio has been reorganised in order to create the appropriate capabilities to effectively implement the enterprise service bus— and integration layer to enable sharing of information.

Nurturing of innovation
There are initiatives in place to support innovation, for example collaboration between key stakeholders. Key stakeholders include the patients, doctors and nurses, and IT solutions providers. There is now a plan to have HIT staff sit at the healthcare organizations to interface directly with the clinicians and provide the required solutions. [44] state that the capabilities through which the healthcare

organizations provide superior values must be dynamic, that is requiring constant update. The dynamic superior value requires innovation which is being nurtured through the innovation fund. The idea behind the innovation fund provides incentives to key stakeholders in order to work together to come up with innovations that can help improve service delivery by making use of the available technology. This will fill the gap of caused by the dwindling numbers of nurses and to improve efficiency at the hospitals.

5.1. Implications for Research

With respect to the managerial levels of the organization, existing resource orchestration research focuses on top level managers [45]. Theoretically this paper illustrates that resource orchestration actions can be carried out at all levels of management. The main idea is that there should be a strong coordination team that oversees the implementations of the agreed upon issues in steering committee meetings. Future research could examine how knowledge is structured and bundled at the various managerial levels. Another area for research could try to isolate the processes that facilitate the actual flow of knowledge about the capabilities that have been formed to help shape decisions regarding the leveraging of those capabilities.

5.2. Implications for Practice

Carefully choose a change management team and encourage their work throughout the entire process of development and spread of the innovation.

It is important that there is mutual understanding between the professionals in the healthcare organizations. Many times, it is not the development that is fought but change.

The managers at all levels should strive to share information even when it is between competitors. This will go a long way in improving healthcare service delivery as there will be no need to repeat the same test or diagnosis that has already been done at a different healthcare facility.

Capitalize on the positive outcomes from the innovation for instance the initiatives in place to fill the gap of limited staff to handle certain patients and increase knowledge about the treatment outcomes and costs that are observable in healthcare organizations. The value additions can be seen as the strongest driver or behavioural intention to use the new systems.

On the contrary, the absorption and diffusion of newly gained knowledge is still complex. There has been visits to Denmark (top down approach) to pick the best practices but given the way things are done in Sweden (Mutual understanding) it is still hard to absorb the newly gained knowledge.

6. Conclusion

Resource orchestration actions are critical to developing and implementing a number of organizational strategies or initiatives. From the resource orchestration framework perspective, VGR has been able to structure, bundle and leverage its resources in order to keep abreast with the digital transformation. From the findings it is noted that resource orchestration actions can begin at any level of management. However, the implementation of the different actions needed to support resource orchestration are dependent the mutual understanding amongst the managers at the different levels in the organization. Getting to synchronize the various resource orchestration actions could be the ideal situation but is rather difficult to achieve. The findings show the following ongoing processes in resource orchestration; coordination among county councils which leads to sharing newly acquired resources, provision of incentives through the innovation fund and science parks and structuring and bundling of the resource portfolio to create the needed capabilities.

7. Acknowledgement

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