Taiwan Intelligent Health Services Project: An Absorptive Capacity Perspective

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ABSTRACT

Taiwan Intelligent Health Services (TIHS) project integrating IT and communication network into health services can timely and accurately support the information requirement in medical process in anytime anywhere. Data stored in TIHS databases can also serve as a knowledge base if appropriate analytic tools deployed. This study presents the implementation of TIHS project in several public hospitals in Taiwan. A research framework derived from the absorptive capacity perspective is used to explain how the use of TIHS influence the hospital performance. Four propositions are proposed according to field interview.

Key Words: Taiwan Intelligent Health Services, Absorptive Capacity, Case Study

INTRODUCTION

TIHS project includes three sub-projects, RFID integrated applications, Image Exchange Center (IEC) and Image Reading Center (IRC). RFID project is to apply RFID technologies into HIS (Hospital Information Systems). RFID project includes content pharmaceuticals safety, medical process management, long-term healthcare, an isolation ward, and entrance guard. IEC project is to exchange patients' medical images among hospitals. Physician can view the patients' reports and medical images no matter where they come. Presently 78 hospitals have joined. IEC project can reduce the duplicate examination charge and retrench the healthcare cost. IRC project is to provide convenient, height quality electronic healthcare services for people of disadvantaged minority and remote districts. These areas lack of healthcare resource such as radiologist to diagnosis, treat patients, and make good quality decision based on medical images. Medical images include X-ray, CT, MRI, and PET. The methods are providing medical images primary diagnosis from radiologists of urban hospitals, especially for patients from remote districts, hilly area, and offshore island.

MATERIAL AND METHOD

Absorptive capacity is a organizational ability to identify, assimilate, transform, and apply external knowledge to enhance its performance[1,2]. Contradictoryly, the absorptive capacity may limits organizational capability in leveraging knowledge if the organizational or environment context unfit[3]. Although healthcare is an information intensive industry, the adoption of IT in this sector has lagged

significantly behind that of other major industries[4]. TIHS project is in its initial stage and is innovative in its nature. We explore how and why use of these IT can leverage hospital performance by ten in-depth interviews with end users of three public hospitals including Taipei hospital, Tao Yuan hospital, and Chia Yi hospital. These hospitals are chosen to participate TIHS project for they have implemented IT and communication infrastructure for decades. Three groups of end users: physicians, nurses, and IT managers were interviewed.

RESULT AND DISCUSSION

Proposition 1. The use of TIHS can strengthen absorptive capacity.

Hospitals use RFID as automotive pack pharmaceuticals. The safety is a great improvement on the pack pharmaceuticals. RFID also enable the medical machine to reduce the error of pack pharmaceuticals, to take care of dialysis management, to simplify the process of check in, weight measurement, and record the dialysis information. Hospitals use RFID to correct efficacious hygienic knowledge immediately. Thus, action increase the safety promulgates accuracy in patient's safety management. From the absorptive capacity of view, partners might use TIHS to strengthen the absorptive capacity.

Prospositon 2. More absorptive capacity by the use of TIHS would results in better hospitals performance.

Adopters of IHS agree on high technical and economic performance of these technologies. The use of IT has a positive effect on the strengths of the hospital's performance [5]. A valuable apparatus management, for example, the use of RFID can increase apparatus utility rate. As one end user said:"*RFID easy to control the position of staffs and patients' family. An entrance guard of special patients, We use entrance card to treat the special patients with humanity and the sphere of activities management ...*",

A physician in Tao Yuan hospital said: "*We use IRC to integrate medical resource and improve the medical information sharing. It can reduce the repeat treatment inspect and cut down the expense of NHI, and to solve the burden problems of transfer a photograph.*" A manager in Chia Yi hospital said: "*IRC can speed up the decision time of diagnosis and defend the safety of patients when we use IRC to curtail patients the waiting time and traffic time".*

Proposition 3. The greater the technologies uncertainty, the more hinder the use of TIHS, and it results in lower performance in hospitals.

A user in Taipei Hospital said: "*The initial stage, handwork and RFID collateral process increased the working overload*". The users of Chia Yi hospital also said: "*RFID readers are insufficient. Thus, some cases cause patients lost liaison. The entrance cards also are insufficient. If a state of emergence an error treatment would happen on the opportune moment or a not proper time.*" When hospitals face technology uncertainty, for example, IEC transmission too slow, it would affect on the

intention of physician participation. In order to meet the physician has heightened the anticipation, the hospitals must devote themselves to absorptive capability improvement.

Prososition 4. The greater the organization support, the more promote the use of TIHS, and it results in better performance in hospitals.

Interviewees agree on top management's supports in the projects. The users of Chia Yi hospital said: "*A greybeard, the greater part in hospitals, can not understand the meanings of inhibition area. An alarm bell cause the burden of staff.*". If the hospitals can afford the burden of alarm bell, the probability of a successful implementation is much higher. A finding that top management's perceived support for use IS is negatively correlated with staff burden implies that top management support for the use of RFID may have organizational value. In other word, the organization support brings higher absorptive capability of firms and it results in positive performance.

Reference

1. Attewell P. 1992. Technology diffusion and organizational learning: the case of business computing. Organization Science, 3(1): 1-19.
2. Gold, A.H., Malhotra, A., and Segars, A.H. 2001.Knowledge Management: An Organizational Capabilities Perspective. Journal of Management Information Systems.18(1):185-214.
3. Pavlou, P.A., and El Sawy, O.A. 2006. From It Leveraging Competence to Competitive Advantage in Turbulent Environments: The Case of New Product Development. Information Systems Research,17(3):198-227.
4. Thouin,MF. Hoffman,JJ. Ford,EW.2008.The effect of information technology investment on firm-level performance in the health care industry, Health Care Management,33(1):60-68
5. Hung,W.F. Hwang, H.G. and Liao, C.C. 2004,Establishing strategic alliance among hospitals through SAIS: a case study in Taiwan. International Journal of Electronic Healthcare, 1(3):277-290.