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Abstract

National Ministry of Health and Welfare defined Tele health care (Telecare) as a combination of medical care, ICT technology, electronic medical equipment, and other cross-cutting professional to allow people to get the health care and preventive health services in the community and familiar home environment and aging in place. To date, telecare has become the world medical technology and services industry trend. However, most elderly are significantly less familiar with technology use than the general population, inhibiting telecare adoption. Based on service portfolio concept, we design core and supplementary service elements for a Taiwanese telecare center. To further examine how patients perceive the values of these service elements in different adoption stages, we conduct surveys with potential clients and current patients of the telecare center. We take customers adoption process as an indicator of "value creation" and examine how the values of service elements vary across different adoption stages. Meanwhile, service quality and productivity should be properly integrated since quality focuses on the benefits created for the customer's side of the equation, but productivity addresses the financial costs incurred by the hospital. If not properly integrated, these two foci can be in conflict. Thus, our service portfolio will consider not only the value of the services but also the available management resources to run the services. The results suggest approaches to re-allocating the limited resource to the most valuable service elements perceived by customers, and thus help hospitals to drive potential clients, sustain current patients, and maintain service quality of the hospital simultaneously.

Keywords: Service Concept, Symbolic Adoption, Service Design

1 INTRODUCTION

The ever-growing aging population in Taiwan has triggered a corresponding increase in the demands for medical and long-term care services, which in turn contributes to the development of telecare as a cost-effective alternative care delivery approach (Hsu & Tang, 2008). The telecare concept in Taiwan includes two major areas: (1) emergency care or the auxiliary medical service in rural area and (2) chronic disease management (Lee, Chen et al. 2013). Since 2007, the Department of Health has commissioned Information and Communications Laboratories, Industrial Technology Research Institute to develop a Telecare Pilot Program. It is aimed at developing Community-based, Home-based, Institution-based telecare service models with user-friendly human/machine interfaces through introduction and application of the information and communication technology, thus further establishing Telecare Information Integration Platform (Chuang, Tsai et al. 2013). National Ministry of Health and Welfare has defined telecare as the combination of medical care, ICT technology, electronic medical equipment, and other cross-cutting professional, so that people get the health care and preventive health services in the community and familiar home environment and aging in place. Update to date, telecare has become a world medical technology and services industry trend. However, most elderly are significantly less adept at technology use than the general population (Chang, 2015). Our study would like to examine the service design of telecare services. We take client adoption process as an indicator of "value creation" and examine how value of service elements vary across different adoption stages. Collaborating with Chushang Show Chwan Hospital Telecare Center, we expect the results of our research can suggest suitable service portfolio for the telecare center to offer current patients and potential clients.

The research questions are as follows.

1. What are significant service elements that should be included in the service portfolio for potential clients and current patients?
2. How do the values of service elements vary among potential clients and current patients?
3. Do core service elements create higher perceived value from clients than supplementary service elements?
4. Do Gender or/and age difference impact the perceived value of core or/and supplementary service elements?
5. How does the service portfolio balance cost and benefit?

2 LITERATURE REVIEW

2.1 Service Concept

According to the service concept, Lovelock and Wirtz (2011) have mentioned three components while considering the value propositions of services: (1) core elements which are central components to supply the principal and problem-solving benefits, (2) supplementary elements which are required for the delivery of the core elements, and (3) delivery processes (Lovelock & Wirtz 2011). Service operations and marketing studies posit two fundamental service attributes -- core attributes (what is delivered) and peripheral attributes (how it is delivered) (Chase and Stewart 1994; Iacobucci and Ostrom 1993; McDougall and Levesque 2000). The core of a service is the service we think of when we name the service. Peripheral attributes are then everything else. Peripheral attributes can be subdivided further into physical (Bitner 1990; Chase and Steward 1994) and interactional (Butcher, Sparks, and O'Callaghan 2003; Chase and Steward 1994) attributes. Prior research demonstrates that both core and peripheral attributes are positively associated with overall service quality and customer satisfaction (Butcher 2005; Butcher, Sparks, and O'Callaghan 2003; Chase and Steward 1994; Iacobucci and Ostrom 1993;

McDougall and Levesque 2000). Service-Dominant (S-D) logic says service is the foundation of all economic exchange. Thus, even when good are involved, what is driving economic activity is service-applied knowledge (Vargo & Lusch 2008). Moreover, value is always uniquely and phenomenologically determined by the beneficiary. Thus, our study aims to explore the expected service elements from potential clients and current patients. We develop a service portfolio which includes core and supplementary service elements. We argue that patients in different adoption stages demand different service portfolio because their value expectation from telecare varies.

2.2 Symbolic Adoption

The term ”symbolic adoption” was used by Klonglan and Coward(1970) to describe the mental acceptance of an innovation as a good idea. They argued that any new artifact of idea involves both and ”idea” component and an ”object” component, corresponding espectively to symbolic and action forms of adoption. Futhermore, symbolic adoption is defined as ”the peak motivational state reflective of a user’s mental evaluation of the technology and its use as worthwhile concept” (Karahanna and Agarwal 2006). Karahanna and Agarwal (2006) suggested that symbolic adoption, which was conceptualized a a formative construct, includes four subdimensions: (1) mental acceptance, which means the extent to which a user views the artifact, in principle, as a good idea; (2)use commitment, which stands for the degree to whcih one is committed to the use of the technology independent of whether it is mandaed or not; (3) effort worthiness, which refers to the user’s positive evaluation of the return on resources expended in order to be able to use the technology; and (4) heightened enthusiasm, which represents the eagerness with which a user approaches the behaviors associated with technology use. Thus, we are interested in understanding what service elements are the peak motivational causes of mental adoption. Moreoever, based on Klonglan and Coward(1970), we catorgeorize the adoption process into three stages: symbolic adoption, trial adoption and use adoption and examines whether the values of service elements vary across different stages.

3 RESEARCH HYPOTHESES

After a series of interview with the hospital medical deputy superintendent, hospital vice president, telecare center supervisor, and health examiner leader in Chushang Show Chwan Hospital Telecare Center, we summarize the core and supplementary service elements offered by the telecare center. We hypothesize that both core and supplementary service elements are positively associated with symbolic, trial, and use adoption. Moreover, we hypothesize that core service elements have more impact on adoption than supplementary service elements.

Specifically, our hypotheses are as follows:

Hypothesis 1a: Potential clients who perceive greater value of core service elements are more possible to move to symbolic adoption

Hypothesis 1b: Potential clients who perceive greater value of supplementary service elements are more possible to move to symbolic adoption

Hypothesis 1c: Core service elements have more impact on symbolic adoption than supplementary service elements

Hypothesis 2a: Potential clients who perceive greater value of core service elements are more possible to move to trial adoption

Hypothesis 2b: Potential clients who perceive greater value of supplementary service elements are more possible to move to trial adoption

Hypothesis 2c: Core service elements have more impact on trial adoption than supplementary service elements

Hypothesis 3a: Potential patients who perceive greater value of core service elements are more possible to move to use adoption

Hypothesis 3b: Potential patients who perceive greater value of supplementary service elements are more possible to move to use adoption

Hypothesis 3c: Core service elements have more impact on use adoption than supplementary service elements

Hypothesis 4a: Current patients who perceive greater value of core service elements are more possible to move to continued use

Hypothesis 4b: Current patients who perceive greater value of supplementary service elements are more possible to move to continued use

Hypothesis 4c: Core service elements have more impact on continued use than supplementary service elements

4 RESEARCH METHOD

To empirically test the hypothesis formulated above, we had conducted the designed questionnaires survey in Chushang Show Chwan Hospital Telecare Center. Supported by the Show Chwan Health Care System, the headquarter of six Show Chwan Hospitals island wide, we coordinated with Chushang Show Chwan Hospital. It is located in Nantou county, the rural area. The Department of Health, Executive Yuan, R.O.C. (Taiwan) has been promoting Telemedicine Pilot Program to remedy the problem of inadequate medical resources since 1995. The R.O.C. government is pushing forward relevant healthcare plans to cope with the weakening care-giving capability of the family from the increase of core family, and to cope with increasing demands for long-term healthcare services in an aging society (Chuang, Tsai et al. 2013). Chushang Chu Chwan Hospital was established in 1997 which aim to be the leading and only hospital and include emergency medical service, local community teaching hospital and critical care medicine in Nantou. Telecare Center is established in 2007 which had about four thousands patients. We conducted distinctive designed telecare questionnaires surveys using Likert 5 point agree/disagree, multiple choices and some open questions. Four questionnaires are designed for:

(1) current patients
(2) potential clients
(3) telecare health examiners
(4) hospital senior managers

The preliminary data analysis show that the three most demanded service elements are: (1) community-based physical recording & monitoring system, (2) face-to-face consultation, and (3) community-based elderly activities. Besides, both potential and current patients show that they expect the center provides home-based emergency report systems, Alzheimer/Dementia lost found emergency support through mobile global positioning system, medication survey & reminding, pharmaceutical consultation through home visiting or audio/video consultation, and family health consultation through assigned drugstores and clinics. The analysis also shows that current patients are more rely on the supplementary service from telecare, such as helping medical scheduling, hospitalization, inter-hospital transfer, emergency ambulance arrangement and emergency room caring. Moreover, 80% of current patients like to have home-based physical recording & monitoring while only 50% of potential clients show the same interest. In contrast, potential clients are more likely to accept community-based physical recording & monitoring than home-based one. Furthermore, global positioning system of emergency

reporting are more welcomed by potential clients than current patients while regularly telephone caring from health examiners are more welcomed by current patients than potential clients. The different value perception among potential and current patients implies that different service portfolios are required by the two groups (Figure 2 and 3). This finding deserves further study in the future.

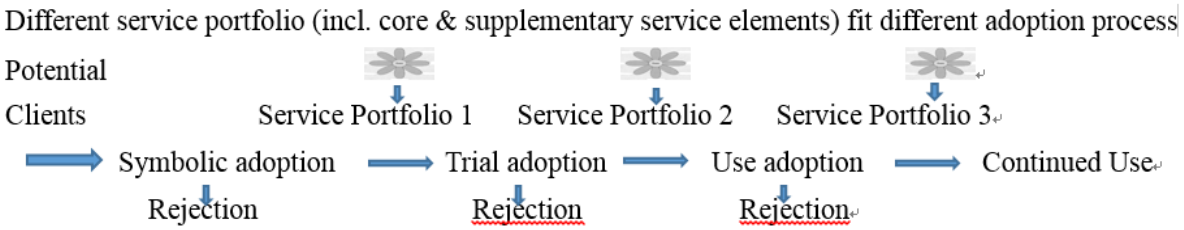

Figure 2. Potential clients : different service portfolio (incl. core & supplementary service elements) fit different adoption process

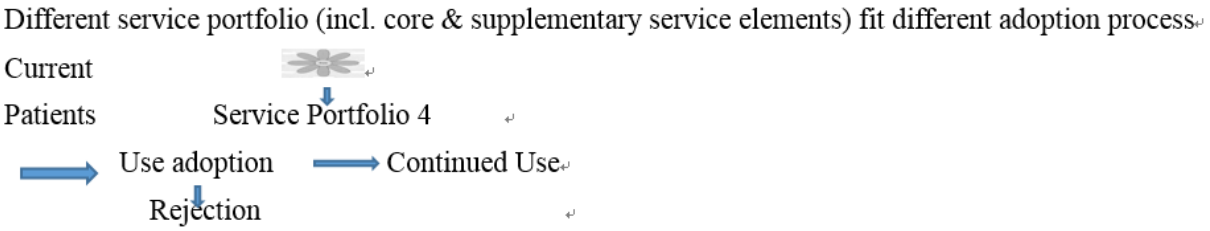

Figure 3. Current patients: different service portfolio (incl. core & supplementary service elements) fit different adoption process

5 EXPECTED CONTRIBUTION

In this article, we posit that different service portfolios should be proposed to patients in different adoption stages. In other words, we posit that patients value service elements differently in different adoption stages. We suggest that the service portfolio should include core and supplementary service elements and patients should be classified based on the adoption stage they currently locate. Patients are inputs to the service process and are coproducers of the value extracted from the relationship. Eventually, our expected result will suggest service portfolios that fit the needs of patients in different adoption stages. Designing a service system is a creative process that begins with a service concept and strategy to provide a service with elements that meet or over expectation of clients. For hospital managerial implications, to ensure the symbolic adoption, trial adoption to use adoption of potential clients and sustain current patients, the service design process should take a patient-centric view. Based on "Customer Value Equation" proposed by Fitzsimmons et al. (2014), a customer's perspective can be captured while considering process quality, price to the customer and costs of acquiring the service simultaneously. Meanwhile, service quality and productivity strategies should be properly integrated since quality focuses on the benefits created for the customer's side of the equation, but productivity addresses the financial costs incurred by the hospital. If not properly integrated, these two foci can be in conflict (Lovelock 2011). Thus, our service portfolio will consider not only the value of the services but also the available management resources to run the services. The results suggest approaches to re-allocating the limited resource to the most valuable service elements perceived by customers, and thus help hospitals to drive potential clients, sustain current patients, and maintain service quality of the hospital simultaneously.

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