A Case Study in Service Visualization: Comprehensive and Integrative Medicine Hospitals, Daegu

Kyung Mi Bae¹, Youn Sung Kim²

Abstract

In this study, a newly established hospital offering both western and oriental medicine in a new innovative process shift is analyzed in order to provide an academic base on visualizing the dual medical service processes followed by the previous qualitative research on service visualizations reflecting the 7Ps marketing mix. Comprehensive and Integrative Medicine Hospitals (CIMH), in Daegu South Korea is a newly opened clinical institution which strives to implement a radical change from traditional healthcare services by combining the medical practices of western and oriental medicines. The case is analyzed in order to determine how PCN diagrams and other service design tools and methods can be applied for various positive implications on achieving the operating characteristics and value proposition. This study finds that visualization of the service processes benefits in monitoring and evaluating the process for suggesting service innovation in service operations management and can be used as a strategic method to offer greater value in a highly competitive healthcare environment.

Keywords: Service Visualization, Service Design, Innovation, 7Ps Mix, PCN Analysis, Medicine Hospital.

1. Introduction

In the past an emphasis has been made on the importance of innovation for all sizes of companies, however industries today, including the health care service [1]. About 73 million baby boomers in Korea are aging and entering a time of their lives in need of medical services. Similar to the Korean case, the US domestic population demographics are also shown in favor of health care services with the aging of 75 million baby boomers which is almost 27% of the whole population [2]. As strategic approaches in a super competitive healthcare environment, copious amounts of investments for service innovation and service design for
achieving operational success has been made by leading companies throughout a broad swath of industries [3]. Since customers are usually taking their parts in the service process for production and consumption of service products, many approaches and efforts are made on visualizing service operations in order to control the difficulties and challenges of the service delivery process [1][4]. Service design is known for its major impact on obtaining high quality customer experiences by cutting service delivery costs, achieving customer satisfaction and loyalty [5].

2. Background

Comprehensive and Integrative Medicine Hospitals (CIMH), in Daegu South Korea was opened on September 10th, 2015 after a long conflict between oriental and western medicine practices in Korea. CIMH is the first Korean medical hospital providing both western (영방; yangbang) and oriental (한방; hanbang) medical services along with regenerative medical treatments as complementary and alternative medicine in one location. The focus of the clinical institution is a new paradigm of healthcare and medical service in Korea by offering integrated medical treatments and services.

CIMH was established by Comprehensive and Integrative Medical Development (CIMD: 통합의료진흥원) and supported by the Korean Ministry of Health and Welfare, Daegu Metropolitan City, Daegu Catholic University Medical Center, and Daegu Oriental Hospital of Daegu Hanny University. This clinical institution is currently offering five subjects: department of internal medicine, department of surgery, department of anesthesiology and pain control, department of rehabilitative medicine, and the department of oriental medicine. The institution is classified as a general hospital running 130 beds with four western medicine doctors and three oriental medicine doctors.

Although this study recognizes the fact that such conflicts and issues are there between western and oriental medicine practices in Korea due to the opposing medical philosophies of western and oriental medical studies, mutual disbelief, and lack of common grounds in oriental medical study, the details of these arguments will not be debated in this study. In fact, in Korea there has been a legal wall that still exists between western and oriental medical practices, for example, the principles of “separation of dispensary from oriental medical practice” means that oriental and western medical treatments cannot be given at the same place and time so far. Due to the reasons mentioned before, at CIMH, there are three separate offices in each department so that the western and oriental doctors do not see their patients in the
same room or at the same time. Therefore the patients can enter the first room to see one of the western doctors, then another room to see an oriental medicine doctor and in the future the third room can be utilized combining both practices when it becomes permitted legally to have a consultation by both.

As a matter of fact, the main challenge for CIMH is the limitation of legal boundaries and circumstances in applying the integrated medicine where each patient must see a doctor from the preferred type of medicine, either western or oriental. Korean national health insurance currently limits only one visit per day which is determined as a hindrance to both of the medical service providers and patients for more active and practical medical services, especially for patients having benefited by receiving both types of medical treatments at CIMH. Since June 2016, about 10 hospitals practicing integrated medicine in Korea have been randomly selected for allowing the insurance to cover the integrated treatment during a trial period before the new law comes into effect. This progressive innovative hospital is now concentrating on its market positioning by running two different outpatient clinic wards, a general ward and a special cancer ward. In this study, the current service process has been analyzed and positive and strategic suggestions are provided by applying the service design tools on this newly established hospital as an implementation study on a real life case.

Ethnography methods such as interviews and observation are used in data collection from the decision makers and upper management of the hospital and observations, shadowing, and pictures are used for the experience of patients and customers. In addition, postings on blogs are reviewed in this study instead of interviewing the patients in order to respect their privacy and inpatient life at the hospital while they are coping with pain and suffering. The decision makers and the upper management who have been interviewed are recognized as service developers since they actually work with visualizations based on their previous experience and insights. The data which represents the present condition and the current environment of the hospital is analyzed through service visualization reflecting 7Ps of marketing mix. In order to recognize the factors and problems which may occur in the process of service operations management accompanying innovation and provide proper service design tools and methods, such as radical innovation of CIMH has been visualized and analyzed in the later part of this study. The results of this study confirms the findings from the previous studies providing an academic basis for the study on visualizations of service processes and a few challenges remain for the hospital to overcome.

3. Literature Review
As one of the most powerful research methodologies in operations management (OM), case studies are often used for theory development and testing [6]. Due to the characteristics of case studies qualitative approach, a literature review was accomplished before the actual case study and an additional review has been supplemented during and after the data was collected and analyzed.

As an exploratory research, conceptualization of the academic studies are reviewed in order to draw the relationship between service visualizations and innovation in service operations management (SOM). Traditionally, OM has concentrated in manufacturing management [7], but SOM is focused on service delivery which includes the activities, decisions, and responsibilities of operations managers [8]. For decades, Six Sigma, Total Quality Management, ISO 9000, and Lean Manufacturing are used to identify and reduce opportunities for defects as process improvement methodologies. Likewise, service visualization tools and analysis can be applied for the same purposes. In addition, the innovative approaches are known to be useful to identify, define, develop, and enhance quality [9].

Beginning with the definition of innovation being a practical change in process, not only as an insight or idea [10], such processes are recognized as innovation motivated by the vision and strategic service objectives of the companies and organizations [9]. In this study, four phases of Double Diamond Design Process Model by UK Service Design Council; Discover, Define, Develop, and Deliver, is applied as a simple graphical way to describe the design process and Process Chain Networks (PCN) Diagrams and Analysis are applied in the SOM perspectives in order to give a balanced view on interaction of service providers and customers [11]. Then, McCarthy’s 7Ps of marketing mix: product, price, place, promotion, people, process, and physical evidence [12][13], are reviewed as assessment criteria for strategic objectives and service deployment of the case and in the review and evaluation on the use of the PCN analysis and other service design tools.

4. Data Organization and Process of Analysis

According to the findings of the previous studies, firstly, the health care service industry could improve their performance by applying the appropriate service design tools and methods in service visualization [1], and secondly, PCN diagrams are found to work more efficiently as an identifier for checking the process and evaluation of the current status and environment while many service design tools and methods play similar functions by using them properly in each stage based on the consideration of the status [4]. Service design tools and analysis
focused on service visualization reflecting McCarthy’s 7Ps of the marketing mix have confirmed that they lead the organizations and companies to be successful in accomplishing the service objectives and supporting in service deployment.

For more than two years starting before the establishment of CIMH and up to this point, about 23 interviews were conducted face to face with 10 interviewees and data was collected between December 2014 and January 2017. Interviews were made with a president, a controller, a Korean traditional medicine doctor, an internal medicine doctor, a head nurse, a nurse, a social worker, a receptionist, and a manager of the administration from CIMH and two patients. The attitudes and opinions of service designers and providers about the service process in everyday operations were observed during the interview and the feedback of two patients were analyzed. For the inpatient experience, some posted reviews from articles and blogs were used in the analysis along with the observation instead of interviews in order to respect the privacy and life of the inpatients. Based on the data, analysis was made in the following order: 1) on the application of service design tools and methods, 2) on the use of PCN diagrams in order to have an overview and details of service operations management, and 3) over the examined overview and determined details by reflecting the 7Ps to assess service objectives and evaluate service deployment of the hospital.

5. Analysis

First of all, about 30 service design tools and methods were expected to be found from the empirical case study from the literature review, however, only 13 of them were actually identified from the analysis on the CIMH case: 1) co-creation and observation in all phases discover, define, develop, and deliver; 2) brainstorming in the first three; 3) shadowing in the first two; 4) interview, ethnography, questionnaire, and stakeholder map in the discover phase; 5) value chain analysis in the define phase; 6) prototyping in the develop phase; and 7) heuristic evaluation and task analysis in the deliver phase. Co-creation has helped CIMH to pay attention on the experience and interactive relationship of customer in the process to create value through sharing ideas and experiences. Through the practice of observation and brainstorming in multiple phases of development, the concept of having two different medical practices of western and oriental medicine in one place and immersing towards the combining and unifying the practices for a holistic benefit to customers. Interview, ethnography, questionnaire, and stakeholder map were applied to elucidate the patterns of the everyday practice for the conceptualization of the product, designing the process, and development of
both services and processes.

To make suggestions based on the analysis, quality function deployment is recommended in the define phase and the develop phase. The method can help in transforming the qualitative demands of the users to quantitative measures for supporting practitioners to focus on the characteristics of the product or service. For the development and quality of the service product, the Kano model is suggested in the develop phase and deliver phase. Since CIMH is associated with CIMD working on the projects to play its role as an institute for research study in the practice of both Korean traditional and western medicine, prototyping can be also used in deliver phase for the concept to be presented with a deeper understanding. In addition, persona for having a person as type of user on the practical situation and real setting can be useful in the earlier phases; role playing tools for having understanding of the difference in users in the same setting; customer journey map for visualizing the different touch points during the customer’s interaction with the service; and heuristic evaluation, usability test, and task analysis need to be practiced high in degree due to the speed of its improvement.

![PCN Diagram for process]  

**Figure 1** PCN Analysis on Value Proposition of CIMH

Secondly, PCN Analysis on CIMH is made based on the PCN Diagrams following the basic steps: 1) identify each process which needed to be analyzed, 2) identify the process entities that participate in each process segment, 3) log the steps where the needs of customers are recognized as a starting point and the needs are met as an end point, and 4) fill in the intermediate steps to show where the entities in the network [11]. Since CIMH has been established for about a year and is in the early stage of its market positioning and
segmentation, the focus of the analysis is on the value proposition and strategic process positioning of the hospital which can be the base for the PCN Analysis for CIMH in the future. CIMH customers have the option of seeing both doctors practicing western and Korean traditional medicine in one stop through the enabling innovation. The customers can save time and effort from going to see a doctor at each type of hospital or clinic by 1) reducing ☹ cost to customer; who does not need to ☹ browse around or ☹ make a few trips to oriental and western style clinics or hospitals at the same time, and 2) reducing +$ cost to Comprehensive and Integrative Medicine Development (CIMD) and CIMH practicing both medicines in one place which could result in -$ double the amount through duplication when running two hospitals. The innovation reduces ☹ cost to customers since they only have to come to CIMH saving time to browse and wander around. In addition, it reduces ☹ +$ costs of both CIMH and patients by having the comprehensive and integrative care centers which is ☹ +$ less expensive than having separate facilities. There is an opportunity +$ for CIMH to make additional revenue by offering both services which is actually ☹ cost to patients for the time being. This will eventually be changed for ☹ the benefit of customers when the government passes the proposal of CIMD regarding the Korean national insurance policies. Overall, CIMH should focus on the management of interactive service processes.

[Figure 2] Analysis on Deployment Reflecting 7Ps; Karen’s Experience Map

<table>
<thead>
<tr>
<th>Objective Service Strategies</th>
<th>Identified Mix Element of 7Ps</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Karen left comments on her visit as an interesting experience and on the clinic as a place to be back in the future.</td>
<td>1) place, product, process, people</td>
</tr>
<tr>
<td>2) Karen requested an internal medicine and acupuncture treatment. Basically, Karen was meeting both doctors during the visit.</td>
<td>2) place, product, physical evidence, people</td>
</tr>
<tr>
<td>3) She was advised to have her stomach checked as a part of the annual comprehensive medical examination. Afterward, she was seen by the doctor practicing oriental medicine and guided to visit the care center. There she received the acupuncture treatment around her stomach and lower body from the doctor and then received moxa treatment around her back by the nurse which she claimed as the most relaxing experience and also feeling cured</td>
<td>3) product, process, physical evidence, people</td>
</tr>
<tr>
<td>4) Karen was aware of CIMH is supported by the Catholic community.</td>
<td>4) place, product, process, physical evidence</td>
</tr>
</tbody>
</table>

In the third analysis, the service strategies and service deployment of CIMH were studied reflecting 7Ps of marketing mix. Its service objectives are focused on shaping the process of its healthcare and medical services product with its people i.e. staff. Four objectives of CIMH are
becoming 1) a clinical institution where the patients want to be treated (product); 2) the first clinical institution which practices comprehensive and integrative medicine (process); 3) a clinical institution where members can work with pride (people); and 4) a place where practices divine love and spread the gospel (people).

In the process of service deployment, it is recognized that CIMH has established its place, product, and process only partly since it is in the early stage of development, implementation and newly entered into the market. On the other hand, the greatest asset for the hospital and the community is determined to be its people who are motivated to bring innovation through this new medical paradigm and successfully implementing it. This study suggests the service designers of the hospital need to apply the appropriate and suitable visualization tools and methods for planning, designing, applying, checking, assessing, analyzing, and examining in order to realize their strategic objectives.

6. Conclusion

In conclusion, this study suggests visualization of the service to CIMH for drawing attention on its radical innovation in the process of providing comprehensive and integrative medical treatment and services. PCN and other service design tools and methods are found useful in expanding opportunities for various implications especially in value proposition. Therefore, visualizations of service process can support the CIMH to find its position in the competitive environment as strategic methods and be practical and beneficial in monitoring and evaluating the process for innovation in service operations management.

This empirical study suggests CIMH visualization of its service to draw attention on the radical innovation in the process of providing comprehensive and integrative medical treatment and services. Patients at this cutting edge hospital still can see only one doctor at a time due to the legal limitation and circumstance in practicing integrative medicine. Service design tools such as co-creation, observation, brainstorming, interview, shadowing, and ethnography are identified through the analysis. According to the customer journey map, a specialist is suggested to replace the receptionist for handling the concerns of the visitors and offering medical advice in choosing a type of medicine the customers prefer. In addition, quality function deployment and the Kano Model are recommended for ensuring the customer satisfaction and heuristic evaluation, usability test, and task analysis should be applied to have the overview of the project and work with details. In the PCN analysis, enabling patients at CIMH to receive both types of healthcare services, western and Korean traditional oriental
Based on Service Design Tools & Analysis

[Figure 3] Findings from the Analysis

The service strategies of CIMH are concentrated in shaping the process of its healthcare and medical services, especially the product with its people. In the service deployment, CIMH has learned that it has only established its place, product, and process partly in the early stage of its innovative life cycle. Through the analysis, the greatest asset for the hospital and the community is determined as its people who stay motivated to bring the innovation and work on it. In conclusion, it is recognized that PCN diagrams and other service design tools and analysis can be used expecting various implications for the operating characteristics and value proposition of CIMH for its radical change in the shift by combining two medical sectors into one medical product. The findings from this study shows that the use of visualizations in service process not only supports winning in a competitive healthcare environment as strategic approaches, but to monitor and evaluate the process for proposing service innovation in operations management.
References


