USING CO-CREATION PROCESS TO SUPPORT SERVICE INNOVATION:

AN ACTION RESEARCH STUDY OF A PRIVATE UNIVERSITY IN THAILAND

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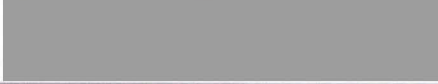<u>Using Co-creation process to support Service Innovation: An Action Research Study of a Private University in Thailand</u> (210 pp.)

Advisor of thesis: Assoc. Prof. Vincent Ribiere, Ph.D.

ABSTRACT

Higher Education Institutions are operating in a more and more competitive environment. In the case of Southeast Asia for instance, the creation of the Asian Economic Community (AEC as part of the ASEAN), is allowing AEC members and International universities to open campuses in any of the 10 founding countries without having to have a local university partner. Furthermore, the number of entry students is currently declining due to pyramid age gap in most Asian countries. Consequently, universities are operating in a much more competitive environment and in order to compete, or even just to survive, they need to provide more than just excellent education. The services that are provided to students must also meet students and parents high demanding and high quality expectations. University service providers are in general not fully equipped with the tools and mindset to develop novel services that will fully meet students' expectations. This research looked at how using a co-creation approaches and tools, involving graduate students and university service providers, could help developing novel services.   An action research approach was used to test this approach and shown positive outcomes in helping building stronger understanding between university service providers and students, but also by helping building empathy between them leading to the

co-creation of novel university students' services ideas. This study was conducted in a private Thai university but the researchers believe it could be similarly applied in any other university context (private or public and in any other country).

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CHAPTER 1

INTRODUCTION

In this chapter, the author briefly describes background related to the subject of this research which is globalization and AEC, higher competition between the Higher Education Institutional, and Service Innovation. The Problem statement is introduced and followed by the objective of this study and research questions. In this chapter, the author also provides the scope of the study, important of study and definition of a term.

1.1 Background

1.1.1 Globalization and AEC

Globalization driven and influence all businesses to develop and improve themselves faster and beyond their competitors. Globalization drives the business from the local market to international market. These increased and created opportunities for new and existing comers are in the market, it increased the employment. At the same time it creates a variety of choice to customers. New products and services are crated and exited in the market which also increasing the competition.

Those firms which can develop themselves by creating value added and collaborate with the other or even with their competitors will help the firm to survive and sustainable in the longer term. Collaboration helps to strengthen their business in the crisis situation through pooling their resources, knowledge, and know-how to build confidence from their investors.

The ASEAN Economic Community (AEC) regroups 10 countries (Indonesia, Philippine, Malaysia, Singapore, Thailand, Laos, Myanmar, Cambodia, Vietnam,

Bruni Darussalam). These countries share similar objectives and agreed to help each other in term of accelerating economic growth, social progress, culture development in the region, to promote the region peace and stability. They collaborate more effectively for the greater utilization of their agriculture and industries, the expansion of their trade and to provide assistance in the form of training and research facilities by facilitating each member to do business with no boundary and by improving the educational standards to satisfy and give more opportunity to their people. In term of education, "opening borders" of AEC affect educational institutions by increasing competition and by forcing them to improve their services standards, and service quality. Since high quality and famous education institutions can now start new educational businesses in each member countries, local educational institution need to improve their standards to remain competitive or they might disappear. So universities which are not in the top ranking, need to find out solutions and set up a new business strategy to compete and survive in the educational war. The quality of the education provided is very important, but the educational services provided around it are also important for student consideration. Consequently, every business sector needs more innovation than ever before. Innovation is the process used to transform an idea into something that has value and that can improve human well-being and the society.

1.1.2 Higher Competition between the Higher Education Institutions (HEI)

Higher educational institutions need to change and add value to each of their products and services, universities need to create or improve their performance by creating new products or services to satisfy student's need and reach their expectations otherwise students will turn to their competitors who can better serve their needs.

The market needs is changing, it become more complicated, and more complexity. So, the firms cannot play the same role as before. There are many factors that change and drive the market and force the organization to look for an opportunity in the market and non-stop developing and improving their products and services. Porter (1980) offered cost leadership strategy, differentiation strategy and focus strategy to overcome the high competition in the marketplace. These are known as Porter's three generic strategies and can be applied to any size or form of business. Porter suggested that a better way to beneficial the company is to choose only one strategy which helps to avoid to take any risk on wasting the resources.

A cost leadership strategy is when the firm targets to offer the lowest price to all business segment. To maintain this strategy requires a continuous of cost reduction in all aspects of the business by including outsourcing cost, controlling production costs, increasing asset capacity utilization, and minimizing other costs including distribution, R&D, and advertising cost. A cost leadership strategy may cause a lower customer loyalty, as price-sensitive customers will switch once a lower substitute is available in the market, the customer will be no longer royalty to any particular brand since they concern and have been attractive by the lower price of products and service. A reputation as a cost leader can also result in the reputation for low quality, which may cause a difficulty of shifting a firm to rebrand itself or its products once the business chooses to shift their strategy to a differentiation strategy in future. A differentiation strategy is appropriate when the market is competitive or saturated, the target customer segment is not price-sensitive, a customer has very specific needs which are under-served, and the firm has unique resources and capabilities to provide the uniqueness products and services to satisfy unmet customer needs. The

differentiation strategy is required special resources, for example of the creative ideas, the unique techniques which come from a big brainstorming and the diversity in the organization.

A focus strategy is when the firm is focusing on one or a few segments in the industry. A firm may be trying to offer a lower cost in a particular scope (cost focus) or differentiate itself in that scope (differentiation focus). A popular post-Porter model was presented by Kim and Mauborgne in 1999 Harvard Business Review article "Creating New Market Space". In this article, they described a "Value Innovation" model in which companies must look outside their present paradigms to find new value propositions by looking across their boundaries of competition.
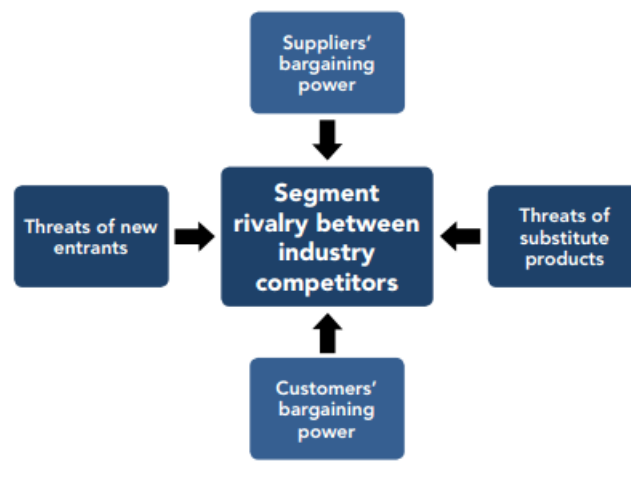
Figure 1: Michael Porter's Famous Five Forces of Competitive Position Model.

Source: Porter, M. (1985). *Competitive Advantage: creating and sustaining superior performance*: New York. Free.

Porter (1985) defined the five forces model which shows as a series of five boxes which is combined;

1) Existing competitive rivalry between suppliers
2) Threat of new market entrants

3) Bargaining power of buyers

4) Power of suppliers

5) Threat of substitute products (including technology change)

In each box provides suggested points which can help the firm to develop the competitive position, business strategy plan or investment decision making about a business. As Porter described about differentiation strategy which is appropriate to the market that customers have specific needs and under-served. These drive the changes by forcing producer to differentiate their products and services, and make it unique in the market. Then it can satisfy the unmet customer needs. Now a day, customers tend to purchase products or services which can represent their lifestyle. This is an opportunity for the business to set up the business strategy by focusing on creating new customer value. Usually, the products and services cause the market change, because of quality, efficacy, packing, delivery influence the customers 'decision making. For example, if the product and packaging look obsolete, a customer will think that the quality is lower so they will not purchase it and new features new function products are more attractive to the customer.

Since the market is becoming bigger and many providers are ready to serve their products and services to the customer. The business strategy needs to be changed; an old strategy must be updated. So high competition will occur like a price war, after service competition, etc. But the organization cannot rely on the policy; they need to find new marketing strategy and policy by creating value through the market, using new product or service development to grow the brand, using the innovative idea to differentiate the products and services. The competition provides the opportunity for people to build skills, unlock creativity and innovative ideas, and

discover a new solution in a large market. The unique and differentiate from the competitors maybe the new solution for business, to help and prevent them from the copying.

1.1.3 Service Innovation as a Weapon to overcome high Competition in the HEI Sector

Service innovation can provide an effective solution and create a sustainable competitive advantage to the organization in a longer term. Higher educational institutions can benefit from a service-based strategy in many ways because adopting service-based strategy can help improve the service offering, cost structure, delivery system and technology (Gronroos, 2000).

Currently, all businesses need to become creative and innovative by doing their businesses in the different way and unique from their competitors. Seeking for a new way and a new technique to assist and solve the business problems. So, business needs more innovation than ever before. We need innovation to help adopting, improving, well-management all limited resources by maximizing the benefit and improve human well-being. Innovation is a way that shows how to transform an idea into something that has value and that improve human well-being and the society. Innovation can be radical innovation or incremental innovation. "No innovation no life, no innovation no future" (Biver, 2013)

Innovation was used as a term to explain the development of new technologies into products and services in many industries. The confusion around the definitions of innovation can be explained by the fact that the literature provides many definitions, sometimes very different from each other. Roger (1998) defined innovation as

"Innovation is concerned with the process of commercializing or extracting value from ideas".

Innovation can helps businesses to get a better point of view and look at the business model in a different dimension. Innovation can be applied and differentiated the existing products and services in the market and create new value. This will be a very useful and help business to gain profit. But, the firms need to ensure that they have well understood the market and customer real needs and firms will create the right products and services to satisfy the market needs in the future.

Another definition by du Plessis (2007) is "Innovation is the creation of new knowledge and idea to facilitate new business outcomes, aimed at improving internal business process and structure and to create market-driven products and services" , firms can find the way to improve the process and their business structure which rather than focusing on produce new products and services which innovation in improving the existing products, services and processes can be last long and help the business to be sustainable and cost less. Changing the way to produce and improve the quality of each process can be reorganized by the business leader and owner who define the strategy of the business. "The adoption of one idea may trigger the adoption of others. So, innovation can help firms to be sustainable by the way that firms would invest in implementing and growing the idea into their human assets which could help the business to gain more competitive advantage and differentiate their business products and services from their competitors. Since innovation involves a process of exploiting new ideas successfully in order to improve competitive position in the marketplace.

Some of the important drivers for innovation were identified as market needs, customer initiatives and feedback, new or improved technology, employee initiative and feedback, governmental regulations and similar services in the market which drive for the creation of new services as applicable in the organization. And high competition in the marketplace also trigger and drive innovation, so it is challenging for the manager in the service companies to sense the changes and respond to the changing customer needs through appropriate innovation products and services.

This study will focus on innovation in the service sector, especially in the higher education institution which is now increasingly competitive. Service innovation is what people create and facilitate the easy way or improve thing to satisfy and help people get the better life. It can be new services, a new way to deliver service or even improve existing service to be better. Service innovation has become as a term that referring to innovation that taking place in service contexts, including the introduction of new services or the improvement of the existing services. New and improved services can be provided by non-services sector also. For example, the manufacturing firms that aims to enlarge their supply portfolio by providing value adding services. Especially, the service innovation plays an important role in the knowledge-intensive sector, and then the concept of service innovation is likely to differ from the product innovation.

In the education sector, several universities have developed programs to better serve student needs. In the past, the university is the place for people who came to study and exchange their knowledge with the other in the specific place but now the technology is increasingly developing and involving in many parts of the education area. So, universities have to improve the quality of services and find the way to

survive by creating the new and interesting programs, creating new services to compete with their competitors. Verganti (1999) Johnne and Storey (1997) Hope and Muhlemann (1997) Edvardsson et al (1995) De Brentani (1995) defined the definition of the characteristics of service, e.g. intangibility, heterogeneity, perish ability, simultaneity, etc. make the process more difficult and complex. Evangelista & Sirilli (1995) Tether (2005) defined services are heterogeneous because each act of production is a new experience due to the active participation of consumers. The idea of service innovation defined by Burrill and Ledolter (1998) van der Aa and Elfring (2002), service innovation is defined as a company's new service offering beyond its usual service (i.e. an offering not previously available to a firm's customers), in term of a new service potential result, process. Service innovation can be classified in term of improving a current service by re-design; on the other hand, service innovation can be creating a new service which can come with greater risk and high investment. Service innovation is thought of being more efficient, valuable to customer and gain more revenue.

Coombs and Miles (2000) van Ark et al. (2003) Gallouj (2002) OECD (2005) European Commission (2009) gave a definition of innovation in the higher educational institute and commented that high technology does not mean can help to gain the advantage since people needs are changing and increasing, they are looking for the unique product and services which can represent their lifestyle. In the higher educational institution needs to change and add the value to each of the products and services, universities need to create or improve their performance by creating new products or services to satisfy customers need and reach their expectation otherwise that the customer will turn to their competitor who can serve their needs. Service

innovation can provide an effective solution and create a sustainable competitive advantage to the organization in a longer term. If the educational institutes playing the same role and offer the customer the same services, it will no longer in the market or become a leader. Service innovation is a weapon to help the educational institutes go forward and sustain in the changing world.

1.2 Problem Statement

Since market needs are increasing and are becoming complicated, an organization needs to react and adapt faster than their competitors and also adapt faster beyond their market needs. There are many factors including internal factor and external factor that the organization hardly to control are emerging and were affecting from the globalization and AEC.

Higher educational institutions are also affected by the globalization, by the new customer requirements, by the world trend, by new technology, by higher customer expectation, etc. A precise and better understanding of the customer and market are important and help to set the direction of the business development and business strategy to compete even though the competitors can carry out their strategies and reach their goals depend on their resources and abilities. It is not surprising that the education and competition are related, and it becomes more energizing. If there are no competition the education will not improve and move forward. The educational standard is improving and developing, the knowledge has been adjusted to be a match and realistic, new theory has existed, learning techniques have been developing and using and quality of learning is increasingly required. Developing and improving products and service in the traditional solution cannot bring any new value. So the uniqueness can help businesses create new value and

compete with their competitors in a long run. Especially, in Educational sector which was running the same role for many decades, since the world is changing very fast, customer needs is increasing and more complex. If the educational institutes playing the same role and offer the customer the same services, it will no longer in the market or become a leader. Service innovation is a weapon to help the educational institutes go forward and sustain in the changing world.

These had led the author to the question about how service innovation looks like in the higher educational institute and how co-creation technique can help to support new student service development process in the university context in order to compete their competitors and stay ahead in the higher competition now a day.

1.3 Objective of Study

1) To examine how service innovation can help to improve new student service development process by facilitating "Co-creation technique" in new student service idea generation process.

2) To investigate how student involvement in new student service development process can help creating value to new student services.

1.4 Research Question

The research question associated with this study is to investigate: How Co-creation could be used to support service innovation in a university context? This study does not look at the educational services provided but focuses on the services provided to graduate students.

We could not find any study that shows how service innovation could support the service business units of a university. The researcher was particularly interested in studying how university service providers and students can use service innovation

through Co-creation activities. Co-creation is an approach that can help each party to better understand each other and generate new ideas to solve the current problems that they face and as a new way to improve and develop university student services.

1.4.1 Initial Study Approach

In order to better understand the status of service innovation in the university context, we conducted an initial study. The purpose of this study was: firstly, to understand the current process used to develop new student's services. The Second purpose was to evaluate the strength and weakness of the current student services. We used semi-interviews to assess the perception and expectation from the students and from university service providers' point of view.

1.4.2 Initial Study Results

The researcher collected the information by note taking, voice recording and with a questionnaire. The interview showed that currently student services did not fully meet students' expectations. There was a lack of understanding of students because there was no clear communication channel between students and other stakeholders causing a lack of student involvement. Then it showed that there was no systematic mechanism to generate new student service ideas. On the customer's side (students and other stakeholders), have high expectations about the university's facility accessibility. Students expect novel and new student services which provide a convenient way to access student's information systems.

1.4.3 Initial Study Key Learning/ Findings

A key finding and useful for the new student service development is that students expected effective services and channel for them to provide feedback which will be beneficial to the university in order to improve and develop new student

services. This expectation needs to be considered as a big opportunity to better understand and receive students' voice, which is a good way for the student involvement to the new student service development process.

We believe that these findings and problems are common to most universities. They reinforced our motivation to find novel ways to develop new services that match students and service providers' expectations.

1.5 Scope of Study

This research studied the gap between students and university service providers, student's expectation and perception, university service provider's perception, and service innovation in a private university in Thailand. Researchers used co-creation process as an instrument of research methodology and defined the scope of study as follow:

1.5.1 Scope of Content

In this study, researchers investigated the customer involvement through co-creation workshop in each action research cycle which will organize between Thai graduate students and Thai university service providers from difference business unit in each cycle of action research. This study is an action research based on the concept of service innovation in the university context, co-creation technique, and new student service idea generation.

1.5.2 Scope of Demographic, Samples and Location

The participants are Thai Graduate students from different majors who are studying at least in the second semester of master programs, in Thai private university in Thailand. They are currently studying and experiencing the student services from the university. Thai university service providers are the main people who developed

and provide student services and will also be part of the participants of this study. Since the researcher found out from the initial study that there was a satisfaction gap between university service providers and students, consequently, the researcher would like to help the university to fill this gap and further develop the customer's relationship by using co-creation techniques. We will invite Thai Graduate students and university service providers from the student service related business units to participate in a Co-creation workshop on a voluntary basis. The co-creation workshop will be facilitated in Thai language and all questionnaires will also be translated in Thai.

1.5.3 Scope of Researching Duration

Researchers have been conducted in November 2016 to January 2017, in Thailand.

1.6 Importance of the Study

The result of this study can be used in academic aspect as helping to create a business vision, business strategy and help to foresee an academic trend in the future. It can be used as a tool for facilitating and creating new student services, and helping to create new value to educational services. It can help the university to improve and develop their services which can reach the unmet students need. Moreover, the result of this study can also be used as a weapon to support service innovation in the university context and it is a weapon to lead the university to become a leader in the educational industry.

1.7 Focus and Limitation

In order to study and research on the topic of student's expectation and perception, student service provider's perception, customer (student) involvement,

new student service idea generation, service innovation, researchers have to make a clear focus and limitation in order to keep the study in the specific research structure and area. The study is confined to a focus on student service idea generation only from student service related departments in a private university in Thailand, for example, Admission department, Record office, Computer center, Graduate Office, etc. Researchers choose to study with those university service providers because they are the person who create and develop student services and provided to the student. Then it is very important for student retention and it will impact to the student's life almost 1-2 years while they are studying.

Furthermore, there is a risk of reference data. Since there are not many literatures, article and empirical study that study about service innovation in the university or in the higher education institute. Therefore, researchers try to study the related literature as it will be useful and give a better point of view and information.

1.8 Definition of Term

Customer expectation is a belief about a service delivery that serves as standard against which performance is done. (Zeithaml, Bitner & Gremler, 2006)

Customer perception is an overall picture of the products and services that customer perceive from consuming and experiencing, it also includes company image, expectations, external influences, service quality etc. (Solomon, Bamossy, Askegaard & Hogg, 2006)

Customer interaction is an action that generated by two or more people who interact with others to achieve a common goal through their reaction (e.g., language or emotion), (Schutz, 1966).

Customer Journey or Customer experience is the customer's interpretation of the service process and how customer feels and interacts with it during their journey, Csikszentmihalyi (2000) Ding et al (2010) Johnston and Clark (2008) Meyer (2007) Pullman and Gross (2004) Shaw and Ivens (2002). The experience is perceived from the point of view of an individual customer, and then two persons will not perceive and have the same experience (Pine & Gilmore, 1998).

Service innovation is an interplay of service concepts, service delivery system, client interfaces, and technologies (Hertog, 2000) and often entails new way in which customer view and use the service. Agarwal & Selen (2011a, p.1172) conceptualize service innovation as an" elevated service offering" that is made up of "new client interface/customer encounter; new service delivery system, new organizational architecture or marketing proposition; and/or improvement in productivity and performance through human resource management.

Co-creation is a process of new service creation and/or in an improvement of existing services (Tidd & Hull, 2005).

Idea generation is a key component of the front end of the process, often called the "fuzzy front end" and recognized as one of the highest leverage points for a firm (Dahan & Hauser, 2001).

The value proposition is a clear, simple statement of the benefits, both tangible and intangible, that the company will provide, along with the approximate price it will charge each customer (McKinsey, 2000, p.53).

Competitive advantage is an advantage that the firm has over their competitors (Porter, 1985).

Empathy measurement is a way to capture the empathic reaction in a specific situation. Empathy is perceived as a characteristic of one's personality, then empathy is measured either by asking subjects about their experiences immediately after they were participate to a particular situation. Empathy can measure by studying the facial, gestural, and vocal indices of empathy-related responding Zhou, Valiente & Eisenberg (2003, p.275), or by various physiological measures such as the measurement of heart rate or skin conductance. There is no perfect measurement tool of empathy. Since, self-reports can be influenced by a variety of interfering factors. Most often in researching empathy in adults, the measurement is rely on the administration of various questionnaires associated with specific empathy scale. Some of the most widely used questionnaires have been Hogan's empathy (EM) scale Hogan (1969), Mehrabian and Epstein's questionnaire measure of emotional empathy (QMEE; Mehrabian & Epstein, (1972)), and Davis's Interpersonal Reactivity Index (IRI; Davis 1980,1983 &1994). And it tends to be nowadays preferred among researchers. The IRI is a questionnaire consisting of 28 questions, it divided equally among four subscales; that is "perspective taking" or "the tendency to spontaneously adopt the psychological vies of others in everyday life"; "empathic concern" or "the tendency to experience feelings of sympathy or compassion for unfortunate others"; "personal distress" or "the tendency to experience distress or discomfort in response to extreme distress in others"; and "fantasy" or "the tendency to imaginatively transpose oneself into fictional situation" Davis (1994, p. 55-57). Davis's scale is different from Mehrabian and Epstein, because it calculates a separate score for each of the subscale, not calculate an overall value for empathy.

Novelty of idea is referred to how different it is with respect to what has been previous seen, by a specific user or by a community as a whole.

CHAPTER 2

LITERATURE REVIEW

The purpose of the first part of the literature review is to provide an overview of the definition of innovation and service innovation to better give a clearly understanding and present the difference concepts and ideas of service innovation in different areas, in general terms. The second part will explain new value added in the university context, which is concerned at the beginning stage of the customer perception, how customers perceive the service value in the university context and how they concern about new value added to become the competitive advantage. The next part of the literature review is Co-creation process which is an interaction between key people in a particular study group. It is helping the firm to create new value to products and services. It shows the relationship between service innovation and customer involvement in the general areas for instance manufacturing industries, telecommunication industries. It will focus on the importance of service innovation, the implementation of service innovation in the organization. The third part will cover service innovation in a higher education institution, why service innovation is important and is a concern? How service innovation be implemented and applied in the educational areas? And what kind of frameworks or models should be used in higher education? This includes different definitions and frameworks of service innovation in different areas.

The literature review will lead to our research question and researchers explain what have been done in the initial study which is the first step to better understand the perception of each key stakeholder before the study.

2.1 Innovation Concepts and Definitions

Innovation is defined in general meaning by Kuusisto & Meyer (2003), Tidd & Hull (2005) that is a process that may occur in the way of creating new products or services/improving physical products, in the extended products process, in a new/improved internal processes and organization, or may occur in the improving networking, marketing and sales, etc. Some papers defined innovation in service to a process of new service creation and/or the existing service improvement.

Roger (1998) defined innovation as "Innovation is concerned with the process of commercializing or extracting value from ideas". Generally, innovation can be applied in every single part of business in order to help business improve and by creating new products and services. These will be a very useful and gaining profit for all businesses, but the important thing is that not all firms can apply and get the benefits. The firms may be hardly found or lack of the person who has well understanding of the market needs and has the ideas to create the right products and services to satisfy the market needs. Another definition by du Plessis (2007) is "Innovation is the creation of new knowledge and idea to facilitate new business outcomes, aimed at improving an internal business process and structure and to create market-driven products and services". For this definition is concerned about the outcome of implementing innovation the firms which caused internal changes and affect the market needs later on. The firm can find the way to improve the process and their business structure which rather than focusing on produce new products and services. On the other hand, innovation in improving the existing products, services and improving process can be last long and help the business to be sustainable. Changing the way to produce and improve the quality of each process can be stated

by the business leader and owner who define the strategy of the business. Tidd & Bessant (2009) stated that it would be the great successful stories in the business if the firms do not only focus on creating new ideas but focus on producing new products and services which are time-consuming in R&D, a big investment. So, innovation can help the firms to be sustainable by the way that the firms would invest in implementing and growing the idea into their human assets which could help the business to gain more competitive advantage and differentiate their business products and services from their competitors. Since innovation involves a process of exploiting new ideas successfully in order to improve competitive position in the marketplace.

Some of the important drivers for innovation were identified as market needs, customer initiatives and feedback, new or improved technology, employee initiative and feedback, governmental regulations and similar services in the market which cause a high competition and also drive the creation of new services to apply in the organization. A high competition in the marketplace also trigger and drive innovation in a way that it challenges the managers in service companies to sense the changes and respond to the changing customer needs through new and appropriate innovation products and services.

Innovation can be Incremental or Radical, so there are two ways that companies can innovate by using incremental innovation strategy or radical innovation strategy. It is time to say that it is a way of "a little bit at a time" or "in a completely crazy way" of changing. As we already know about big movement in the business world is happening it causes a high competition also. Then, it is time to discover and seek to a new tool or a new method to support and help business to development and sustainable. Innovation is a new solution since there are many

factors in a different context in each firm which is considered before choose the exactly method or type of innovation. Incremental innovation is not a huge change which is the firm tend to do a little bit change at a time and maybe start a small process of production. Think of incremental innovation as a cost cutting or feature improvements in existing products or services (Leifer, 2000). It is not difficult to require many resources to apply or develop the incremental innovation to the business, but it is required precisely and clearly a business strategy to start. The reason that why incremental innovation is popular because it is less risky if compare to radical innovation. The advantage of incremental innovation is that it is hard to go wrong since it is reducing cost and improving the products and services, and process. It is nothing that the market will reject, and it is a way that meets market demands. Incremental innovation is important but it is not only one way to turn thing different. Radical innovation is that the firm is continually innovating itself in such an extreme way that like if an entire industry collapsed overnight that firm would be able to continue on without much difficulty at all. But, not any companies can make that statement because it is required many resources, for example, human capital, new ideas generation, new technology, research time, etc. It does not mean that it is impossible for a firm to apply or do completely change in the market, on the other hand, it is amazing and will effect to the business trend and discovery of new customer needs. It is interesting when the firms launch new products or services that look different in the market. And it was innovated in some way that created the uniqueness and helps the business gains a competitive advantage.

Pure radical innovation described by Kim & Mauborgne (2005) as what they call "blue ocean strategy". Blue ocean strategy involves not only fighting competition

but circumventing it. Rather than fighting for market share company steps aside and simply creates its own market. The example that Kim & Mauborgne give in their book is that of Cirque Du Soleil, a Canadian circus which reforms the circus and performs in the different way when the industry was facing the crisis and profit disable. Cirque du Soleil removed most of the weirdness from the historical circuses and focused on producing absolutely phenomenal performances. Instead of charging a couple dollars for entry tickets, it increased the price up to $70. In return for such a huge price the viewer is treated to a genuinely amazing spectacle. It is not a circus, it is something completely different and it leaves a lasting impression on the audience. That is the power of blue ocean strategy. Don't compete or fight to gain market share but create your own market. This all sound great but the most difficult part of blue ocean strategy is conceptualization. As a result determining which venture to undergo becomes extremely challenging. That is why many companies decided to stick with incremental innovation which is the decreased risk and the investment required plus the tracking of a product is already working on the market. It does make sense. Incremental innovation is the improvement of existing technologies, processes, products or services which are a common form of innovation today.

Radical or disruptive innovation is an innovation that significantly impact to the market. This concept focuses on the impact of innovations as opposed to their novelty. It is a high uncertainty with high risks, and it is not guaranteed for high returns. Radical or disruptive innovation could change the structure of the market, create a new market. However, incremental innovation is the dominant form of innovation. Radical innovation is generally a complex process, indicates a difficult, and risky process. Smaller firms or new market entrants can play the different roles in

the market by introducing radical innovation because it is a way to be a difference from the existing similar business and more attractive to the market. Smaller firms or new market entrants maybe have no enough resources to invest in the incremental innovation process, and then it is a better way to play a new role in the market by differentiating themselves.

Table1: Characteristics of Incremental and Radical Innovation

Definitions of Radical Innovation	Definitions of Incremental Innovation
New-to-the-world	New-to-the-company
Delivers a step-change in performance improvement	Delivers gradual performance improvement
Requires new competencies, skills or expertise	Utilises existing competencies and processes
Destroys existing organisational competencies	Enhances existing organisational competencies
High risk	Low risk
Requires a change in business model	Operates within the existing business model
Radical innovation that delivers sustainable development necessitates social and systemic change	Perpetuates existing social practices
Challenges the rules of the status quo and thus leads to the identification of systemic resistance to change	Does not challenge the systemic status quo, and therefore may be adopted with little resistance

From table 1; it shows the difference character between two types of innovation. Incremental innovation can be applied to the business by using the existing technology and only focused on cost cutting or features improvement for existing products, services, processes, market, and business model. It is a certainty way and less risk to improve the competitiveness in the current market. While radical innovation is high risk and uncertainty, but radical or disruptive innovation explore new technology and make a huge change in the existing market or even create a new market. Anyway, both characters are bringing the new value of products and services to the market.

Keeley, Pikkel, Quinn & Walters (2013) divided innovation in a book "Ten types of Innovation" which helps people to get well understanding and find the best

solution for their business. Innovation is classified in ten types framework, focusing on internal and distant from customers to become more apparent and obvious to end user. It is started from what they are questioning" How do we get innovation to succeed instead of fail?" and they wanted to make a book that would reveal the whole, remarkable, and important emerging discipline of innovation, because there are so many people concern and now see the urgent need to innovate for their businesses. They sense that their old ideas and structures must give way. They imagine that newer, better futures are out there. The book explains the combination of ten types of innovation is reliably used in any successful offering and the framework forms.

Table 2: Ten types of Innovation
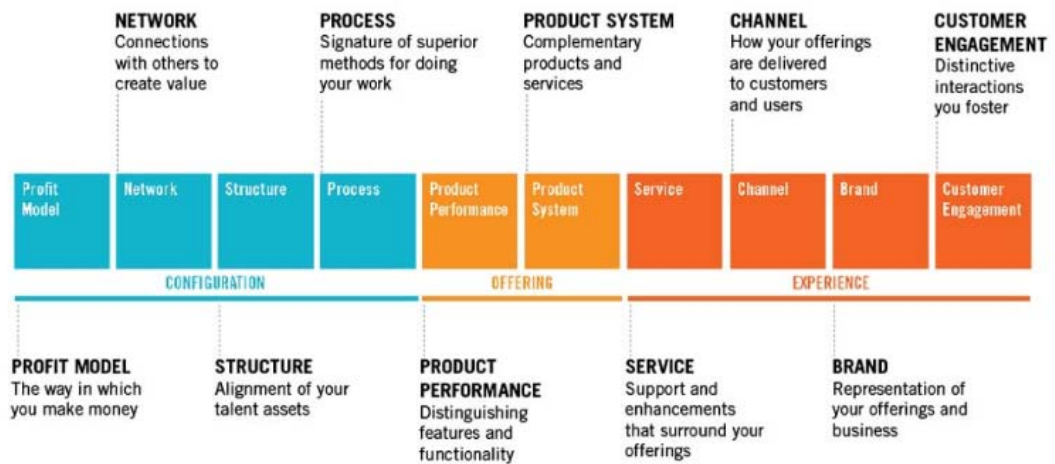
Source: Keeley, L., Pikkel, R., Quinn, B., & walters, H. (2013). *Ten Types of Innovation: The Discipline of Building Breakthroughs*. New Jersey: John Wiley and Sons.

The ten type framework is simple and intuitive, and it is structured into three color-coded categories. The type on the left side of the framework which is including Profit Model, Network, Structure, and Process are the most internally focused and distant from customers. As you move toward to the right side, the types become

increasingly apparent and obvious to end users which are product Performance, Product System, Service, Channel, Brand and Customer Engagement.

Innovative Profit Model is a fresh way for the businesses to rethink to convert the firm's offering and their resources into cash. It is a great model that shows the understanding of what customer want and how the providers can make new revenue. For an example of profit, model innovations include premium price, where the companies figure out how to set the price for their offering or charge more than their competitors. This model challenges the industry to earn new revenue in ways that are different from competitors or industry norms, for example, selling a service when everyone else sells products. Network innovations help businesses to provide a way to take benefit from their networks such as their customers, suppliers or other companies. Since no company can offer or do everything alone, then network innovation means a firm can capitalize and strength its own business while collaborating with other firms. The example of network innovation includes creating secondary markets to connect with alternative consumers, or building franchises. Structure innovations are focused on organizing company assets in unique ways that create value. It is including the performance improvement from each department such as human resources, R&D, and IT. Structure innovations are including to build incentive systems to encourage employees to work toward and achieve business' goal faster, standardizing assets to reduce operating costs and complexity or even if creating corporate partners to provide sophisticated, continuous training. It is difficult for the competitors to copy because it is atypical and significant organizational changes. Process innovations involve the operation and the activities that produce the firms' offerings. Process innovations often form the core competency of a firm that

yields advantage for a year or even decades. The example included "Lean production" whereby managers reduce waste and cost throughout a system, it is one famous example of process innovation.

Product Performance innovations address the value, features and quality of the company's offering. It is only one of the ten types of innovation that is the easiest for competitors to copy. So, companies have to develop the products' features that deliver long-term competitive advantage and cannot copy easily. Product System innovations help to build ecosystems that attracts the customer and defends against competitors. It builds platforms that the other to create products and services that add value to yours. Service innovations help to support and increase the value of your offerings. They make a product easier to try, use and enjoy, they show features and functionality and they fix problems in the customer journey. Channel innovations are the ways that you connect your products or services with your customers. While e-commerce has emerged as a dominant force in recent years, but traditional channels such as physical stores are still important. It gives the opportunity to create a relationship and bring a face to face experience to your customers. Brand innovations help firms to ensure that customers and users recognize, remember and prefer your products and services than those of competitors or substitutes. Brand innovations can transform raw materials to prize products and represent value to your offerings. Customer Engagement innovations are all about how customer perceive and their feeling while they were experiencing your products and services. You can use those insights to develop customer relationship between them and your company. Customer engagement becomes more important and brings value to the firms because a customer will

explain what they like and do not like about your product and services. This information helps forms to better develop and improve their offering in the future.

Ten types of innovation is a guideline or a tool that create value for firms and customers. This study will focus on service innovation which is related to the service offering in the higher educational institution. It is concerned as a weapon to overcome the high competition in the educational market.

2.2 Service Innovation Concepts and Definitions

Service Innovation is a relatively new concept which may challenges business provider, in the way they compete and how they sustain their business by creating and adopting an innovation. Innovation is important to every business area including the manufacturing area, the telecommunication area, the education area and research area. However, the concept definition is very diverse and not consistent throughout the literature. In particular, the terms of innovation, service innovation, service development and service design are often interchangeably used.

Service innovation is hard to define and to explain to people, so there are many helpful definitions. The first concept of service innovation was proposed in 1993 by Miles (1993) and has been developed in the past few decades. Ian Miles stated that service innovation by referring to many things:

Innovation in services or in service products, it creates new or improved service products by using technology, new system, new knowledge or new idea or even look at the service production process in a different aspect. Innovation in service processes, it is the way that innovation creates new or improved ways of designing and producing services and can include in service delivery systems also. The innovation of this sort included technological, technique, expertise-based. Innovation

in service firms, organizations and industries-organizational innovation same as a service product and process innovation, and the management of innovation processes within service organizations.

Tether and Tajar (2008) used the exploratory statistical technique of multiple correspondence analysis from a dataset of over 2500 European firms to identify three district modes of innovation: a product-research mode which involves product innovation and R&D activities, a process technologies mode that involves process innovation, is orientated to the flexibility and/or efficiency of production and involves the acquisition of advanced machinery and equipment, and an organizational-cooperation mode that is focused on organizational changes which is heavily dependent on the skills of the workforce and involves cooperative practices with suppliers and customers. The analysis shows that the different sizes and in different sectors have different propensities to engage in each of them. The high-technology firm, almost of all firms are engaged in the product research mode, another firm which is low-technology manufacturers are the most likely to engage in the process technologies mode. Meanwhile, the organizational cooperation mode, which involves supply-chain rather than research-based cooperative practices, is particularly prominent in service. This support to the view that innovation in service is often soft, rather than primarily technological, involving organizational and relational changes within supply chains or network. In particularly, we agree with Johnson et al (2007) that despite the considerable literature which emphasizes innovation as an interactive process in which firms interact with customers, suppliers and knowledge institution. It is diversified and interchangeably use of service innovation, new service development and service design, there is not completely separate between these, service innovation

is the process of devising a new or improved service concept that satisfied the customer's unmet needs but service development occurs once a service concept has been devised, service development refer to all activities involved in bringing that concept to market (Lance A. Bettencourt; Book Service innovation- how to go from customer needs to breakthrough services, 1st edit, 2010). So it means that when the process of service innovation is already implemented then service development will get started. Service design defined as the activities of planning and organizing all components of service in order to improve the service quality and interaction between service provider and customer. New service development concerned about new service opportunities which including all activities that related to new service opportunities, product or service design, business model design and marketing techniques.
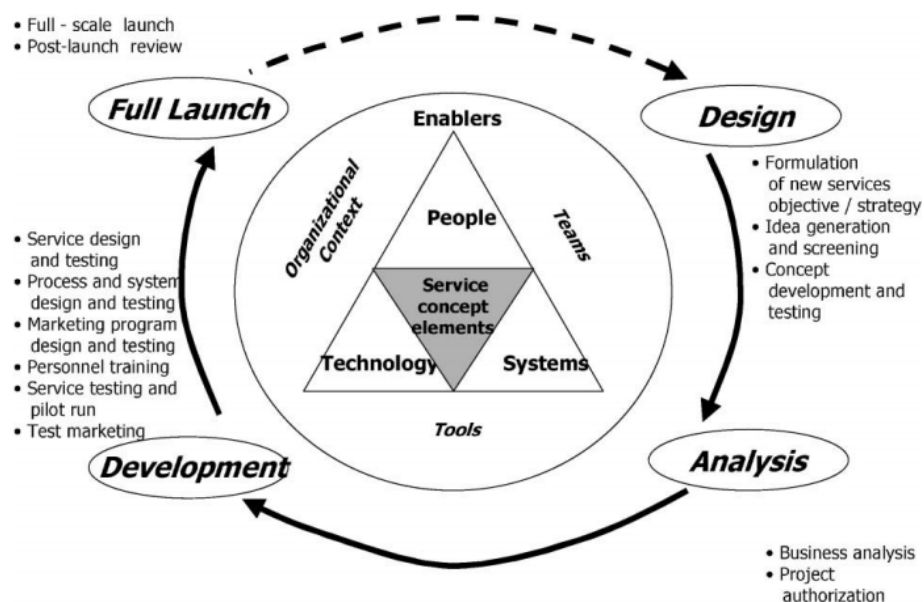
Figure 2: A New service Development Process Cycle

Source: Johnston, R., & Clark, G. (2008). *Service Operations Management (2nd ed.)*.

UK. Pearson

From figure 2; it shows the NSD process cycle that represents the progression of planning, analysis and execution activities. Griffin (1997b) notes that services tend to use new service development process less than those found in new product development. The fundamental of new service development stage revolve around the design and configuration of the service concept elements.

Tidd and Hull (2005) definition is "A process of new services or improved services creation" Service can be the new idea to create or improve the new ways to facilitate the transportation or delivery system of products and services from the producer or supplier to the consumer which help to reduce time, cost and can be more satisfy customer needs.

The concept of service innovation was proposed by Van Ark et al. (2003) "Service innovation is defined as a new change of service concept which is required new technology to structure client channel, service delivery system. It makes a new change to the firm and the market. Lyons et al (2007) defined service innovation as a new service or physical good that was first offered to the world and it was either new –to- the industry, new-to-the firm or a significant improvement of existing service. The characteristic of many service firm and processes are difference from the manufacturing area and the purpose of innovation often aimed to support and overcome the problem which associated to service characteristics such as the difficulty of demonstrating the service to a client, or the problem in storing and building up the stock of service. Innovation helps to create and combine technology to the firm to produce the new thing and differentiate ways of service from the existing products and services in the market".

Most of the service innovation definitions referred to many things which included: Innovation in services, in service products new or improved service products which are different from technological innovation but can have technological elements involve into the process also. This sense of service innovation is closely related to service design and new service development. Innovation in service processes-new or improved way of designing and producing services which can include innovation in service delivery systems and could be technological based, technique based or expertise based. Innovation in service firms, organizations and industries-organizational innovations are similar as a service product and process innovations, and the management of innovation processes. One of the key characteristics of service innovation is it is often a new configuration of existing elements supplied in a new context (Van der Aa & Elfring, 2002).

In business sectors now a day concerned and invested in the way to develop and improve their services to standing out in the marketplace and met the customer needs, since market trend and needs are moving quickly, technologies and many tools are existing, and all resources are limited, so new technique or new knowledge are required to facilitate and combine all factor to sustain the business's competitive advantage. Likely, many factors affected to the change of business, Santamaria, Nieto and Miles (2011) analyzed the impact of different factors traditionally linked to service innovation in the new context of manufacturing firms in order to gauge their impact on service innovations developed in these firms. The study found that "service related" is an important factor in service innovation in manufacturing firms. For example employees training activities, which used advanced technologies and close collaboration with customers have positive impacts on service innovation in a

manufacturing firm. The study examines whether such "service related" factors show a significant impact on product and process innovation in these manufacturing firms. Future research should include finding on the interrelation among three types of innovations.

Rosenthal (2012) reports nine case histories of manufacturing firms which introducing significant new service innovations and increases understanding of how incumbent firms successfully accomplish this transition. The paper identifies two primary strategies for the firms which require CEO/President sponsorship, but on the different corporate culture. The nine case studies suggest how to overcome these three inherent disadvantages of service innovation which is 1) subsequent appropriation becomes more difficult 2) difficult to standardize 3) the complexity challenges management focus, by understanding the role of corporate culture and organizational structure in the new service innovation process.

Service provider often focuses on service customization for individual customer needs to respond positively to the changing customer requirements. So, the changing customer needs, rapid technology development, and increase competition and drive the service provider to continuously innovate and to focus on creatively using technology, knowledge and its networks to provide services that value for a customer (Van Riel & Lievens , 2004; Kandampully, 2002).

2.3 New Value Added in HEI

Since the wide and speed of globalization and technology impact to people life and business competition, every products and service sector need to move faster and up to date and beyond the customer expectation. Particularly in educational sector which have the ability to improve their service quality by using all existing resources

and the modern equipment and technology, in order to improve the existing programs, to improve the admission information services, to improve the service delivery system even though to create new program/curriculum to satisfy the needs of the existing customers and new customers. The educational direction and strategy need to be state and clearly understanding the organization to guide and encourage educational faculty to improve their performance and reach the organization's goal. So, the customer expectations and the customer perceptions are concerned in the setting strategy plan. If the educational invested the technology and developed the new program by knowing the customers' trend, customers' behavior, what the customer expect to learn and what they perceive, these will be very useful and maximize resources. And sometimes customer might not know what they really want to learn, they might not know their deep need, but the educational can innovate a new course or program these would be a novel and great education services in the future. Service innovation is a way to create new values added to the existing educational services or new services which are making an opportunity to the educational services attractive to the market.

Service innovation has become significant and challenges not only to the profit-oriented organization but also to non-profit organizations like a higher educational institution. Service innovation applied into educational context can make a new value and help to develop and utilize for service quality enhancement, positioning and gaining the competitive advantage in the higher education marketplace, also can be fostering customer satisfaction. Customer satisfaction can define in term of the perception of the customers, how the customer understands and realize that the products and services which they have taken be useful and satisfy their need. So the providers come over the negative feedback and complaints from the

customer by involving the customer in the production process, started from the beginning of the initiative ideas, product and service design, production process until the finished products and services, and introduce to the market. The customer interaction and involvement help to shape the business to be more customization and added value to the products and services even create new value to the customer as well. Before, go further to the improvement process, customer's expectation and customer's perception need to be addressed and understand clearly.

2.3.1 Customer Expectation and Customer Perception

As mention before, the service provider can come over the negative feedback and customer's complaints by better understanding the customer perception. Customer perception is how the customer understands or act to the offering or services that they have taken which typically affected by advertising, reviews, public relations, social media, personal experience and other channels. It is difficult for the service provider to measure the success of offering to a customer since the customer perception depends on the individual perception; some people have a customer service experience at the high level, so their perception is very high and not easy to meet. The goal of service providers is to find a happy medium of customer expectation and quality of service. Dursun, Oskaybas, Gokmen (2013) measure the quality of the distance education and try to find out students' expectation and what extend students' expectations are met. The data obtained from the questionnaire with 463 students is evaluated. Service quality of distance education applications in the education sector was examined including five quality determinants, tangibles, reliability, responsiveness, credibility, and empathy. The examination of partial SERVQUAL scores indicates that the expectations are not met all five dimensions affecting service

quality in the universities providing e-MBA education. Most dissatisfied dimensions were responsiveness, followed in order by reliability, empathy, tangibles and credibility. It indicated that students' perceptions of services are under their expectations. These results are important in term of modern marketing which is adapted to education service marketing, by focusing on the educational expectation of students, parents, and society. Education institutions marketing educational service should specify the marketing mix strategies. So students' expectations can be met by making necessary regulations starting with a statement under responsiveness dimension such as faculty members should be available to provide a consultancy about universities and education program. Administrative staff should deal with student one by one. Library staff should have the competence to address the needs and demands of students. The challenge of innovation occurred when public demand was changed, high expectations of the customer, high quality of products and services, difference characteristic of products and services to satisfy customer needs and represent their life's style. So, service innovation in the higher education institution had to be changed to satisfy and attract to the current students or the existing customers by improving the quality of products and services, for instance, the quality of the program, instructor, service system, etc. However, service innovation in the higher education may be an emergency by adopting technology to facilitate the way of doing things or delivery system or creating new programs. For instance, providing online programs that can be suited to a new group of customer who is a full-time worker or distance people is a way of targeting new groups different from those enrolled in the traditional classes-based institutions.

Service innovation character is a key feature that shows a belief in the disruptive service innovation view new customers as an important segment to target. Because they are expecting things to be done in the different ways and it will be reasonable to pay in high tuition fee. Anyway, it will cause a negative perception for the current customers since it is more expensive than the regular course. Those technologies can assist in executing the procedure of new ways of doing things, such as new laboratory equipment, online technology is some of the enabling technologies that help to simplify and capacitate technological universities develop strategic unique selling proposition to attract the potential students. However, the result of service innovation through disruptive innovation is creating the new value proposition i.e. a new way to organize things and people, technology and process to deliver superior service at lower cost in higher quality. A new value proposition can help the institution to be ahead of their competitors. The conventional universities that refuse to adopt the disruptive innovation and target the new group of customers because of the belief in the old way of doing which is considered as inefficient.

Rasli, Shekarchizadeh and Iqbal (2012) present a gap between the perception and expectation of service quality in Higher education from the perspectives of 163 Iranian students who studying in five top public universities in Malaysia. The result showed the negative perception of education service quality and the performance of education service haven't met their expectations. The possible cause is adjustment problem among international students, the adjustment is the degree of a person's psychological comfort, for instance, the different culture, different academic setting of a university, different environment which made them insecure, differences in classroom protocol, Quality of education, instructor-student relationship and method

of communication which affect to the students' attitudes. Another cause related to communal interaction, the international students lacking a satisfactory relationship with host students and do not desire an interpersonal relationship. So the negative perception will cause to repurchase the educational service, negative recommending, negative impact on student retention and the students will spread negative word-of - mouth about the university. So they suggested for the future research which can study deep into the difference discipline, origin or even the difference background of the students, and can conduct in deep interviews and observations.
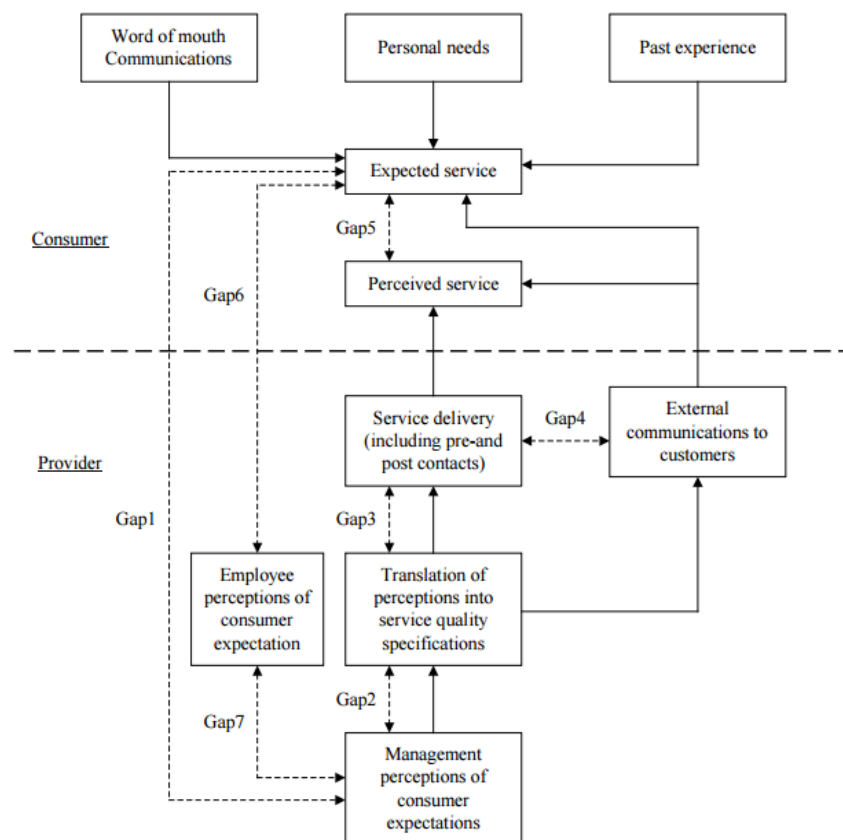
Figure 3: Model of service quality gaps.

Source: Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implication for future research. *Journal of Marketing, 49*, 41-50.

From the above model, there are seven major gaps in the service quality concept but there are only important three gaps such as Gap1, Gap 5, and Gap 6 that have a direct relationship with the customers.

Gap 1: Customers' expectations versus management perceptions: it shows that the firm lack of the marketing research. The firm might not know the customers' needs or might not have enough information about market trend, and then launched products and services are not satisfying the market needs. It cause to the customer s' perception about their products and services. On the other hand, the firm has inadequate communication or has too many protocol or steps of management that cause the result of the customers' perception.

Gap 5: The discrepancy between customer expectations and their perception of the service delivered: in this case the customers' expectation s are influenced by the extent of personal needs, the past service experiences, and word of mouth recommendation. These cause a change and increase the customers' expectations that the firm has a difficulty to satisfy.

Gap 6: The discrepancy between customer expectations and employees' perception: this gap happened when the employee perceive or misunderstanding about the customers' expectation. It will waste time and resources when it has not a clear direction of the market needs.

Those gaps can help the higher educational institute in term of a limited resources and time consuming while developing a new students services. Then to clarify the perspective from customer side and service provider side at the beginning stage is a very important for new student service development process. A better way

to better know what the market wants is that involve the customer to the development process.

On the other hand for the study in the education sector in Thailand, Khanchitpol Yousapronpaiboon (2014) investigated service quality in higher education in Thailand by following five dimensions of SERVQUAL (reliability, responsiveness, assurance, empathy, and tangibles) and examined the validity and reliability of SERVQUAL in assessing higher education in Thailand. This study provides a conceptual and operational framework to help to determine about the undergraduate students' expectation and perception. The result from a total number of 350 undergraduate students from a private university shows that the researcher found out that the higher education in Thailand did not meet the undergraduate students' expectation. SERVQUAL's five dimension from the lowest score to highest is tangibles, followed by responsiveness, assurance, empathy, and reliability. The finding is similar to the results of the previous study by Zeshan, Afridi, and Khan (2010) assessed to service quality in the eight business school in Pakistan and Khodayari and Khodayari (2011) studied to service quality of Islamic Azad University in Iran. There is a gap between students' expectations and perceptions which indicate that the higher education needs a lot of effort to improve service quality, service delivery, it needs to upgrade facilities and equipment in order to decrease the gap between undergraduate students' perception and expectation in higher education in Thailand. From the above studies show that there is internal and external factor which affected to the customer's perception of the quality of education, firstly the nature and behavioral of the student which less interact with the other such as between student itself and between student and instructors. On the other hand, the

educational environment and facilities, for example, the learning tools, equipment, the program, the interaction between the faculty staffs and students when students need help and more information. These affected to the student's perception and feedback. Educational service quality requires being improved and modernizes to meet the customer needs. Johan de Jager, Gbolahan Gbadamosi (2013), they identified the major predictors of students' satisfaction and the role that perception of service quality by a random sample of 564 students in three universities in South Africa and Swaziland. The result shows that the most important predictors of overall students' satisfaction were intention to leave, trust in management, and perception of readiness for change. These help the universities to pay more attention to improving administrative support, ensuring more intervention and engagement with new entrants and more over a use of students' feedback. The implication for the management of higher education in these countries, paying more attention to security and safety on campus and attention can be paid to preparing for a more supportive registration process. The university itself and the length of stay at the university being the most significant predictor and affect to the trust in management, perception of readiness for change and overall satisfaction of the students. Karahan, Mete (2014) determined and evaluates the quality sufficiency of higher education institution according to students' feedback, at Diyarbakir Vocational High School of Dicle University in the fall semester of 2012. The result shows that generally, students find the college's physical and environment condition sufficient, they are glad about the content of education and training, resources, and technological capabilities. Students agree on the benefit effectively from the research and application areas, and the lessons make important contribution to professional development and career preparation and good

contribution to the development of creative and innovation ideas, but the majority of the students participated in the study are not satisfied with colleges' mentality on competitive and entrepreneurial providing. As a result, it may be suggested that college administration staff should work more effectively. As the result shows that the customer's perception is changed and become more complicated, students expect more attention and help from a service provider. This is a chance to improve the educational services and make it as a competitive advantage in the future.

Chen, Wen and Yang (2014) contributed to the current understanding of systemic service innovations by focusing on the particular issue of how to create a commercially viable business concept for e-healthcare. The results suggest that the needs of the care may have different meanings, in terms of value proposition, the service organization of e-healthcare needs to take a broad view towards customer space and service benefit, especially when it comes to the formation of a commercially viable business concept. In addition, e-healthcare services are not just means of promoting healthcare service quality and health interest of the service recipients, but may bring about a concerned impact on the cost and revenue structure of the service organization. It is important for the manager in the hospital to consider e-healthcare service as a fundamental part of medical care operations when evaluating the cost-effectiveness of e-healthcare. So service provider needs to be clearly understanding the service nature and their resources and abilities before innovate and initiates their products and services, however, all effort and investment need to reach the customer needs even that it is just a great products and services which are not commercializing. The higher educational institution can get a better understanding before setting the goal and strategy plans by being more focus on the negative

feedbacks and identify the barriers since there is intellectual capital in the educational sector to be more leverage and well organize. For example human capital; instructors, experts and faculty staffs which value the service by providing through the application skills, know-how, and expertise. Human capital is and organization's combined human capability for solving problems and exploiting its intellectual property. Since human capital is inherent in people and cannot be owned by an organization, people leaving will effect to the organization and service quality, so the organization has to be good management and facilitate people to maximize their abilities to provide services. Structural capital is another supportive of improving the service quality, structural capital includes process and database of the organization that supports the human capital to function and relational capital consist of the relationship such as customer relationships, supplier relationships, trademarks and trade name, licenses, and franchises.

Thakur and Hale (2013) identified the perceived enablers and barriers to service innovation in developed and emerging economies. Results indicate that the managerial perceptions of service innovation success and barriers are remarkably and consistent for both the U.S. and Indian. In service firms, customer demand, competition, and knowledge-based network are important enablers of innovation, a particularly knowledge-based network is defined as creating, acquiring, managing, and exchanging information within/between departments and exchange partners that facilitate knowledge development. This network works as a unique set of factors that can fuel innovation in service organizations. The finding shows that both countries perceive that service firms face obstacles that are often of an economic nature such as cost, long pay-back period, and excessive risk when introducing innovation. However,

the U.S. managers perceive that the impact of these barriers on service innovation is less significant than do their Indian. And the findings indicate that service innovation positively related to the firms' non-financial and financial performance.

Cardona and Bravo (2012) presented a study which tests the 5Q's model proposed by Zineldin (2007) and examines the service quality factors that most impact on student satisfaction. 5Qs Model is concentrated on perceptions (instead of the perception-expectation approach) which combined of five quality dimensions; quality of the object, the process, infrastructure, interaction and communication and the atmosphere. The findings show that Zineldin's framework was similar to the research findings. The most influential variable in explaining students' satisfaction was the perception of the challenge that students may experience in the assessment of their knowledge which implies that students need to have confidence with the quality of the learning received. So perception is everything, as we know that if customers have a poor and negative feeling about our products or services, then it is a very difficult to change a customer without a real focus. In a high competition and hyper-sensitive world of social media, your brand and how you respond to your customer has become increasingly important to manage and defend. Focus on your customers and their comments, communicate at that time and research proactively if you need to move and challenge in the market.

2.3.2 Customer Interaction

Customer interaction is the interaction between the organization and their customers, how the organization creates and delivers services to meet the customer needs until the customer purchase and experience that products or services and they become a promoter to express their experience to the other. This is non-cost

marketing material for the service provider because the customers give a positive or negative word of mouth to the other, so these interaction benefit service provider in term of getting better understanding the customer's behavior and develop the better services into the market. Currently, the organization tries to put the potential customers into their production process, some organization acts faster than the other by involving the customer at the beginning stage as idea generation, pool the ideas from the customers and create a new value of existing products and services. Toivonen, Holopainen and Tuominen (2012) studied the practice of customer involvement in the service innovation process which focused on the development and testing the several methods for customer participation in a medium-sized Finnish insurance company. The result shows that the questionnaire and the traditional methods of acquiring customer knowledge cannot reach the participation of customers in innovation processes. It was interesting that the customers' view of good service seems to require both the emphasis on customer relationships and a clear understanding of the nature of the service in question. It is important to be clearly separate the ways in which a service is described in-house and in which it is presented to customers. Since future studies in the context of services have been rare until now (Toivonen, 2004). The typical customer metric is a survey concerning customer satisfaction and already offered and focused on the customer's feedback. So it is hard to achieve a longer-term forward-looking view or opportunities for innovations with these types of metrics (Zeithaml et al, 2006). However, in service organizations, it is also important to include innovation activity which is the future perspective in daily practice and business strategies. Innovation activities are at the core of companies' strategies, and the aim of innovation processes is to lead to practical applications.

Direct interaction with the customer has been argued to be a key feature of service innovation activities Gadrey et al. (1995), Sundbo and Gallouj (2000). The interaction between the service provider and the customer is important of the new service idea resource and their development into new valuable solution. The customers' problem is a starting point of the innovation process because the service provider and the customer co-produce the new solution which can be developed to be a new service offering. Direct integration of customers in innovation activities can yield many kinds of the benefits. It helps generate new ideas, increases value of the new service, speeds up and energizes the development process, contributes to customer relation and improves customer loyalty Alam and Perry (2002), Magnusson (2003), Heiskanen et al. (2007), Kuusisto and Riepula (2008). Kuusisto & Riepula (2009) studied 12 cases of innovation in three service sectors to increase the understanding of customer integration into service activity by look at the intensity and significance of customer interaction as well as to understand the different roles of customers in new service development process. Data was obtained by retrospectively interviewing key persons who had been involved in the development of service innovations. The study conducted 22 semi-structured interviews which were conducted in Finland and in the Finnish language, and each interview was transcribed. The finding presents key customer roles in service innovation activities. In the majority of the case the innovation process was set up as a multifunctional project development team on an ad hoc basis Coombs and Miles (2000). In new service development process combined with four activities and focused on t the customer roles in each key innovation activities. Initiation; Almost of the ideas were generated or born within the innovating firm than initiated by customers, partners or other actors

since it is the need for innovation which was part of the strategy rather than the reaction from the customers' needs. But, it does not mean that customers would not have an important role in service innovation, customers act as a catalyst which accelerates the service development processes. Evaluation; Indeed, getting early customer commitment to the idea could be essential for the innovator to secure resources to the development, to convince important stakeholders, to overcome the resistance to change from employees or partners which responsible for the new service implementation. Development and testing; Customers were involved in service development process by in some of the cases development was first conducted within the innovating firm and then pilot customers were sought and used to assess and provide feedback for further specification of the service. Sometimes customers were willing to pay for a project involving development and testing activities and shared some development risks. Launch; It is a gradual process, not something taking place at a particular point in time. Often, after the service had been tested or implemented with potential customers for the first time, the service provider formalized the service and produced marketing material with its partners, and made publicity for it.

The result of this study shows that direct customer interaction in service development tends to be limited and focused on the specific tasks in these service sectors, which offer support services to their customers. The study confirms that customer involvement is an important at the early stage of the innovation process Alarm and Perry (2002), even if it was not broad. Two particularly important customer roles were identified in the search stage de Jong et al. (2003) of service innovation activity. Customers act as the catalysts of innovation processes. Secondly,

customers have a key role in the internal marketing of the new service idea within the provider organization. The study shows that not only is the speed of the innovation activities important Alarm and Perry (2002), de Jong et al. (2003), but right timing is essential as well. As the researcher suggested that customer should interact at the beginning stage of services idea generation. It can help service industry to initiate and provide services to meet customer's need. On the other hand, right timing of new service launching is important also, because the processing time will take longer than estimated. The service provider has to be sure that the launch time is a right time and still meet the customers' need. Since customers' need is changing very fast, then the processing time has to be very quick, services have to be improved or develop as fast as impossible. Then technology and human capital are necessary to be concerned and adopt to create new value.

Alam (2013) investigated the process of the customer interaction in the new service development in an emerging market, in India which is based on 24 service firms, in which 48 managers and 24 customers were interviewed. The research answers the questions which related to the customer interaction in new service development that include: What are the modes of customer interaction in NSD? What are the stages of customer interaction? Whom a firm shall interact with? What is the role of employees in customer interaction? And what are the pitfalls in customer interaction process? The finding shows many key interaction issues such as a modes of interaction, front-line employees interaction, iterative process of interaction, stage of interaction, role interaction, types of the customers involved and problems in customer interaction which also offer the perspective on the usefulness of customer interaction and the full benefits of a firm's investment. The result is useful to the

managers who want a better understanding and clear guideline for initiating an effective customer interaction program for their new service development efforts. This research provides a foundation for further theoretical and empirical work on customer interaction in new service development in the existing market of India, in other emerging markets of the world and contributes to the theory and practice related to global service innovation and customer interaction.

2.3.3 Value Proposition

Global economy dynamic the changing activities in the service sector which have been a rapid growth. Service innovation combines technology innovation, business model innovation, social-organizational innovation, and demand innovation with the objective of improving the existing service system, then creates new value propositions or offer new service system. Danjuma & Rasli (2012) studied the characteristic of service innovation and the implications within the context of higher education institutions, particularly in technological universities, so that new value propositions can be developed and utilized for service quality enhancement, positioning and gaining competitive advantage in the higher education marketplace. The study identified three basic characteristics of service innovation: 1) targeting the needs of a new group of customers 2) using enabling technology and 3) adopting new business model or value propositions. It shows that the ability of higher education institution has an impact on people's quality of life by facilitated through innovations. Innovation is meaningful in higher education institutions, new skills are required for incorporation into the service delivery process which helps to satisfy the customer needs and lead to positive word-of-mouth.

The increased customer needs to cause the complexity of industrial products and production processes in a way that it increases interdependence between a service provider and receiver. A service provider often focuses on service customization for individual customer needs and to respond positively to the change of customer requirements. The change of customer needs, the rapid technology development, and the increased competition drive the service provider to continuously innovate and more focus on creatively using technology, knowledge and its networks to provide services that create value for a customer Van Riel & Lievens (2004), Kandampully (2002).

Pathak and Pathak (2010) tried to understand the value chain of higher education at now a day since the changing of demand and supply. They have revisited porter's value chain model Porter (1985) and adapt to the higher education sector. The core of adoption is based on the changing nature of higher education entities, the force of demand and supply in the education market, the unique and dynamic models of business and the enforcement to create more value for the stakeholder and clients. Since there are three emerging business models are brick (physical campus, brick and click (physical as well as virtual campus) and click only (Virtual campus Levine, (2001)) which having its own unique business model, so the study found out that the configuration of the value chain, value driver and the extent of disintegration could be flexible between the three models and the importance is to maximize the value, not only create new value for the stakeholders and clients. This study aimed at the adoption and development of the higher education by the adoption from the porter's value chain analysis.
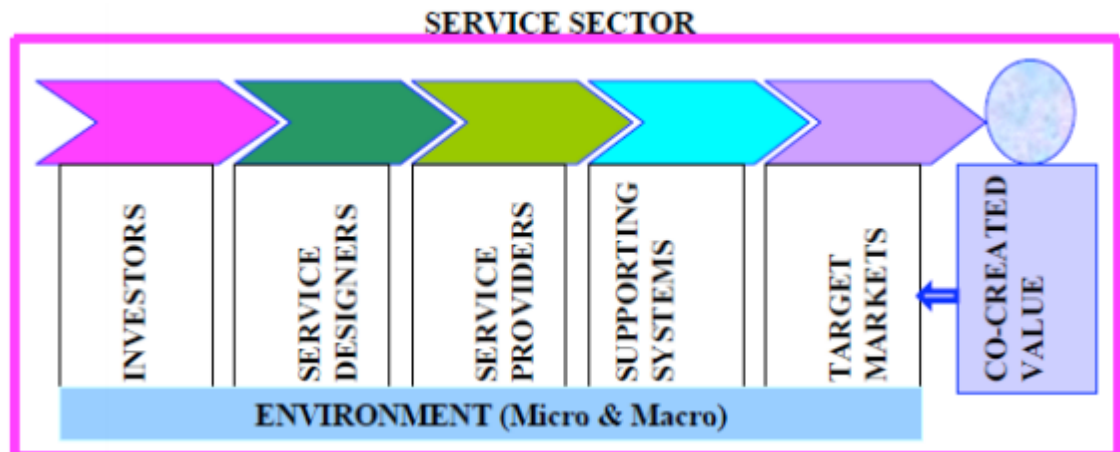
Figure 4: Value Co-creation Model for Services

Source: Makkar, U., Gabriel, E., & Tripathi, S. K. (2008). Value chain for higher

education sector case studies for India and Tanzania. *Journal of Service*

Researc, 46, 3842-3846.

Value Co-creation Model for services (figure 4), it is a simplistic model that

shows a various components within the higher education service industry to co-create

value. The perspective is that when co-create value, it is the involvement of service

providers and customers. The value chain analysis starts with investor's injection of

capital, and then the service designer who are often service creators, service provider

staffs, the infrastructure and supporting utilities, the target customers. This value

chain co-creation shows that the key factor to co-create value in the higher education

service industry is the service providers and the student who direct experience the

student services. It confirmed that to start to co-create value, it should involve the

student in the service development process.

The creation of value is the core purpose and central process of business,

especially when the organization creates the new products and services which need to

pool all resources to facilitate the value creation process and customer delivery

process. Service innovation is ubiquitous and its roles in creating economic growth and wellbeing are increasingly acknowledged. O'Cass & Sok (2013) adopt the premise that innovation capability facilitates a service's firm value creation ability, the management style, employee behaviors and marketing facilitate innovation capability. The study examines the role of managers, and employees and the aspect of the service firm's management style in creating and delivering value to customers through its services. The study adopts a multi-level study, collecting data in service firm in South-East Asia country, the results show that a service firm's innovation capability has a positive effect on the firm's value offering (VO), the firm's value offering has a positive relationship with customer perceived value-in-use (PVI), and perceived value-in-use has a positive relationship with firm performance.

2.3.4 Competitive Advantage

Competitive advantage is an advantage that the firm has over their competitors. In the year 1985, Michael Porter defined the two type of competitive advantage: lower cost or differentiation. It can be classified as two types; Comparative advantage and Differential advantage. Comparative advantage is a cost advantage; it is ability that the firm can produce the products or services at the lower cost than the competitors. It gives the opportunity to the firm to sell the products or services at the lower price than its competitors and the business profit will be gained when they have a big amount of sales. A differential advantage is created when the firm produces the products or services differ from the competitors and generate new value to the customer than its competitors. Service innovation was studied and focused on the significance of service innovation which supported and acted as new ways that the higher education institute can adopt and improve service innovation to

service delivery system and satisfy both current and future customers. Service firms traditionally focus on their strategy by to satisfy the unlimited needs of the customers, and service firms now facing with a high pressure due to the increased competitors. So, firms need to set up and perform quickly with their business strategies between keep focusing on the differentiation of the final services in order to better satisfy customers need or trying to reduce the production costs in order to increase the competitiveness. Service innovation can help the educational institution to set the strategy plan and goal by not only rely on customer's expectations and perceptions to help to develop the program, learning tool, service delivery process, learning environment, etc. Because sometimes customer never know what they are really want to know and learn or even if they want to learn that but they are not able to maximize or take a benefit from what they have learned. The education sector needs to improve and develop beyond the customer needs. Service innovation can take place in the difference forms by using the difference resources such as IT Hardware, knowledge, and investment in faculty training, marketing, and research and develop (R&D). Service innovation does not necessary to take place in the R&D laboratories or research centers only. Since service innovation is difficult to protect from the copying, these cause the knowledge intensive business services to create the solution for the business owners to overcome the crisis.

Victorino, Verma, Plaschka and Dev (2005) tried to understand how service innovation impact to the customer's decision in the hotel and leisure industry, and how new service creation influence to service development and operational strategy. They used the web-based data acquisition from 1,000 travelers in the United State; the travelers are segmented by reason of travel (business and leisure). The study finds that

service innovation impact to the decision making for hotel guest, and it has a larger influence on choice when guests are staying at the economy hotels rather than mid-range to upscale hotels. Also, leisure travelers were found to be more influenced by innovative amenities such as childcare programs, technological improvement, and customization features such as in-room kitchen facilities than business travelers. This study gives a better point of view to the hotel managers that service innovation has the greatest impact on potential guests' choices and help to decide which innovation could be important to implement in the hotel. The best service innovation can be and start from a small change in the hotel room or hotel facilities which is concerned as a key influence on the customer's decision making. Mircea and Andreescu (2012) supported the universities of tomorrow, as the main pillar of society development by analyzes the evolution of universities to service-oriented universities in order to increase flexibility and achieve innovation. Since there are external and internal factors which forcing the universities to change and continuous quality improvement. In a condition of a limited budget but the universities have to keep the competitive in term of produced the qualified student to be competitive on the labor market, the research carried out to compete with other and since the currently, universities is the business unit which aims to gain the financial benefit. The major technology in the service – oriented university can play the importance role to provide the supporting to the new requirement, facilitated to the learning system, teaching system, but might not be the accurate solution for all problems that the universities are facing with. However, it can bring value added in a variety of situations. The importance factor to support the transition of the university to be the service-oriented university is the universities stakeholders' attitude concerning service-oriented architecture (SOA).

Changing element	Traditional university	Service-oriented university	
		Changes	**Opportunities**
People	Offers services for many different people with different needs: students, teachers, administrators, librarians, local and global communities, researchers, maintenance personnel.	• Provide standard interfaces for different categories of users. • The development of an integrated identity management system for all categories of users is a must.	• People can easily interact with each other or exchange data via applications. • Different kinds of input devices may used to access the services.
Organizational unit	A large variety of organizational units coexist and must cooperate with each other (e.g. library, secretary, accounting).	• Can negotiate their own distinctive balance of autonomy and centrality. • University constituents must work together throughout the SOA adoption.	• Have greater control and independence over the applications they need. • Policy compliance among organizational units is increased.
Decision	• Many decisions are taken by humans without being automated. • Organizational units may often misinterpret different business rules. • Business rules are scattered across different applications.	• Must establish organization–wide business rules to ensure consistency. • Decision services execute rules for providing answers to complex questions and enforcing policies and regulations.	• Supports frequently changing externalized business rules through rules repositories and engines. • Implemented decisions can be managed by non-technical people. • Speeds decision cycle by providing information in real time.
Processes	• Processes are performed manually or automated by different applications. • Business processes are difficult to adapt to market changes.	• Business processes should be analyzed, documented and improved in order to assist the implementation of functions, activities and tasks as services. • Main goals are to assist business process automation and to reuse services.	• Increased ability to reuse business functions in different combinations. • Modularity is based on business concepts and less influenced by technical models.
Data	• Having different kinds of data sources across university, data access and transfer are cumbersome. • Main issues are data security and data quality, with emphasis on consistency and accuracy.	• Data services manage access to entities like students or scholastic records. • A Master Data Management solution should be considered to eliminate data redundancy and inconsistency.	• Agility in deploying applications, increased data security and improved transparency. • Visibility within file transfer. • Improved privacy of university information.
Application	• Lack of integration between monolithic applications. • Only a relative small amount of code may be unique to an application. • Redundant code cost money to create and maintain.	• Applications are exposed as services and aligned with business processes. • Application integration is driven by choreography of services they connect. • Commercial software and open source software can work together.	• Easily and flexible integration due to open standards connectivity. • Services can be reused by the education community. • Reduce the total amount of code that the university must maintain.
Computing Infrastructure	• Centralized computing infrastructure is a drawback for long-time progress. • Is often extended to meet immediate necessities, instead of following a methodical plan.	• Has to sustain an increased proportion of online access to different applications. • Must be prepared to host services offered by university to consumers.	• On demand computing infrastructure is available for use. • Decentralized computing greatly raise flexibility for business and IT.

Figure 5: Changes and Opportunities towards Innovation

Source: Mircea, M., & Andreescu, A. I. (2012). Service-oriented University: changes

and opportunities toward innovation. *Social and Behavioral Sciences*, *31*, 251-

256.

Changes and opportunities towards innovation show how to transform the

traditional university to be the service-oriented university. There are two large

perspectives that go through the transformation process, the transition from a

traditional university to a service oriented university. First perspective is

organizational perspective that including people, organizational unit, decision and

process. Second perspective is implementation perspective that including data, applications and computing infrastructure.

2.4 Co-creation Concepts and Definitions

The success key to unlock new sources of competitive advantage is the high-quality interaction that is provided from individual customer to co-create unique experiences with the company. Then, a value will have to be jointly created by both the firm and the customer (see table 5). In the traditional system, the firm relies on their decision what is of value to the customer, to produce the products and services. This system, customers have a little or no role in this value creation. During the last two decades, the firm finds a new way to make the job done by letting customers be a part of service delivery, for example, gas pumps, ATMs, supermarket checkout. Anyway, the firm still plays the big role and focus on their product-centric, service – centric and company-centric. They treated the customers as passive and clearly focus on connecting and building a customer relationship, Pine and Gilmore (1998).

Table 3: The Concept of Co-Creation.

TABLE 1	The Concept of Co-Creation
WHAT CO-CREATION IS NOT	**WHAT CO-CREATION IS**
• Customer focus • Customer is king or customer is always right	• Co-creation is about *joint* creation of value by the company and the customer. It is not the firm trying to please the customer
• Delivering good customer service or pampering the customer with lavish customer service	• Allowing the customer to co-construct the service experience to suit her context
• Mass customization of offerings that suit the industry's supply chain	• Joint problem definition and problem solving
• Transfer of activities from the firm to the customer as in self-service • Customer as product manager or co-designing products and services	• Creating an experience environment in which consumers can have active dialogue and co-construct personalized experiences; product may be the same (e.g., Lego Mindstorms) but customers can construct different experiences
• Product variety	• Experience variety
• Segment of one	• Experience of one
• Meticulous Market research	• Experiencing the business as consumers do in real time • Continuous dialogue
• Staging experiences	• Co-constructing personalized experiences
• Demand-side innovation for new products and services	• Innovating experience environments for new co-creation experiences

Source: Prahalad, C. K., & Ramaswamy, V. (2004a). Co-creation experiences: The

next practice in value creation. *Journal of Interactive Marketing, 18*, 5-14. doi:

10.1002/dir.20015

Co-creation is a management initiative which brings different parties together such as the company and a group of customers in order to produce the new and unique value through the new form of the interaction, service and learning mechanism. The role of the customers changing, they are no longer as the products and services receiver but they becoming to act as an active and knowledgeable participant in a common process. In 2004, Prahalad & Ramaswamy used extensively the wording "value co-creation". They see the co-creation of value as an initiative of the customers who are "dissatisfied with available choices and want to co-create value and thereby co-create value". Tidd & Hull (2005) defined the meaning of co-creation as "A process of new service creation and/or in an improvement of existing services". Service can be the new idea to create or improve the new ways to facilitate the transportation or delivery system of products and services from the producer or supplier to the consumer which help to reduce time, cost and can be more satisfy customer needs.

Chen, Tsou and Ching (2011) determined the effect of co-production on service innovation in the information technology (IT) industry. They would like to investigate the degree of co-production have the greatest influence on service innovation, and partner match based on 157 surveys from sales managers in IT businesses in Taiwan. It shows that co-production positively influence service. The finding suggest that 1) higher degree of partner match, partner expertise, and effective commitment significantly contribute to increasing the effectiveness of co-production practices 2) co-production with a customer has a strong impact on service innovation 3) greater commitments to innovation orientation. Business should choose co-production partners that are compatible and can contribute toward advancing the

relationship. Furthermore, investments in building their innovation orientation will strengthen their efforts in service innovation through co-production. Alessandra Marasco, Masiello and Izzo (2011) tried to understand the clients' involvement in the innovation of creative-intensive business services, namely advertising services. The study shows a relationship gap between the agency and the clients which critical effect to the creativity, customer satisfaction, and agency performance. In order to fill this gap, they developed a framework that helps to analyze the agency-client co-innovation by integrating studies on customer involvement, service innovation and relationship marketing by an exploratory case study of an Italian successful agency.

The framework has been applied for the analysis of the co-innovation relationships of an Italian successful advertising agency. This study confirms the hidden nature of innovation in the examined industry, highlight a various innovation activity that is however difficult to identify by the traditional concepts and models. This is reflected in the need for a broad, multi-dimensional definition of innovation. The result shows there are some types of innovation processes that borderline between innovation and organizational learning, so it makes a difficulty understand the clients' role and collaboration in innovation and reinforce the need to integrate different innovation perspectives and concepts for its analysis.

Golooba and Ahlan (2013) explored the idea of value co-creation between the higher education institution (HEIs) and the industry for purpose of increasing the volume and value of research. This study proposes a service-oriented architecture for service systems in research and innovation undertakings in HEIs. This framework addresses both internal and global perspectives and demonstrates how to shape service system and managed to support value co-creation between researchers,

innovators/inventors, and other stakeholders. Since, in research and innovations are involved with many resources, work and require a particular skill and competencies. Meanwhile, higher education institution and industry have a lot of resources which they can integrate but they continue to operate in isolation. This study recommends enterprise architecture to bring together higher education institutions and the industry to share resources and competencies in a service –oriented approach. This paper is conceptual, but if it can implement it can help to an integration of research-related resources from all higher education institutions in Malaysia and the industry. This will help to strengthen the capacity of knowledge generation and linking of this knowledge to goal development.

Co-creation is a way to help product or service providers to produce a better product and service to the end user by working and sharing their competency and resources to other such as their customers, suppliers or even with their competitors. They can work together from the beginning stage as the idea generation and during the operation process. This concept will bring value to all of the stakeholders, create new value to the customers and reduce production cost and time to market for the producers.

2.4.1 Customer as a Resource of Co-creation

In the nineties, the first article on co-creation were published and it was focusing on the way that the customer participate in the activity and providing their ideas to innovate the products and services Herstatt & Hippel (1992), Peppers & Rogers, (1993), Ciccantelli & Magidson (1993), Dolan & Matthews (1993), Gilmore & Pine (1997), Peppers & Rogers (1993), Pine & Gilmore (1999) and a couple year later, in the scientific literature, it is argued that the value creation has changed. It

aims to work more closely with the customers and concern about the relationship marketing and to increase intangible assets, for example, interactivity and mutual creation within the business areas. The customer plays the role more than consume the products and services and become as co-producers of value. Vargo & Lusch (2004), Protogerou et al (2005), Zwick et al. (2008), Payne et al (2008), Gummesson (2008), Gronroos (2008) This change introduced a customer as a new actor to the value co-creation field and the interactivity between service providers and customers become more useful and create new value to products and services.

Janet, Stephen, Tracey and Jillian (2009) studies about a style of customer co-creation as they are resource integrator and it aims to know which style provides a high quality outcome. The results identified six styles of customer co- creation. They are "Team Manager", "Isolate Controller", "Partner", "Spiritualist", "Adaptive Realist" and "Passive Compliant", and find out that "Adaptive Realist" style tend to demonstrate a high quality of life, on psychological, existential and support dimensions. In contrast, the lowest quality of life was evidenced by those exhibiting "Passive Compliant" and "Isolate Controller" styles. So, as we know that customer involvement becomes more useful and helpful to business to create new value to the offering, but as the above study shows there are many styles of customer and can affect the outcome. Then interact with customers need to have well managed in term of customer selection, co-creation tools, and clear goal while running co-creation activity.

2.4.2 Co-creation Process

In the traditional value creation process, it was focusing on the producers and their role in the process is providing or exchanging the products and services to the

customer. The role was like one was the seller and, other was the buyer. One was sending and the other was receiving. In the literature, this type of value is often referred to as value-in-exchange. The producer created products and services were a source of value which was exchanged in the marketplace. The problem of this definition of value creation is that most of the attention is given to the producer and their roles are much bigger than the customer. Prahalad & Ramaswamy (2004b) defined that the businesses and customers have become no longer separate, but interacting various activities and create a new form of value-value-in –use. The approach is focusing on the interaction between customers and organization. The relationship between the customer and the organization is enabled a joint creation of value. Since the role of customer is shifted and is emphasized in the co-creation process, many authors including Gummesson et al (2008, 2009), Cova & Dalli (2009), Baron & Harris (2008), Payne et al (2007), Prahalad & Ramaswamy (2000, 2004a, 2004b), Gronroos (2011) and Ng et al (2010) analyze the nature of co-creation processes and its meaning, but most cited and well-known definition of co-creation was provided by Prahalad & Ramaswamy (2000). They defined co-creation as a platform of market or business strategy that emphasizes the firm-customer value. It looks at the market as a place for firm and the active customer to share their resources and create new value through new forms of interaction, service and learning mechanism. But, in 2008 the article "Co-creation: a Typology and conceptual Framework" was review by Payne et al. The analysis lead to show that co-creation includes active involvement between firm and customer, integration of resources that create firm-customer value, willingness to interact and a spectrum of potential form of collaboration.

In the process of co-creation, the role of both customer and organization are equally important. The co-creation values were created through the merging of each other's processes (customer process and organization process). Through the interaction, the organization gets an opportunity to influence the customer value creating process. More importantly, in the value co-creation approach, the customer is the one who define and create the value which based on their experience and perception while consuming and using services. The organization, in fact, that should create an experience environment which the customer is invited to join the process as co-creator and have an opportunity to direct experience and provide their feedback to the organization. It helps the organization to have a clear strategy to create the customer value. Hauser et al (2006) state "Successful innovation rests on first understanding customer needs and then developing or improving products and services to meet their needs".

2.5 Service Innovation Framework/ Model

The current study identified three basic characteristics of service innovation, occasioned by disruptive innovation. There are targeting the needs of a new group of customers, using enabling technology and deploying new business model or value propositions. There is a new suggestion about the trend of service innovation development "Output driven innovation" by changing the focus from customer needs to understand what help the customer to get their job done, and this new focus offers several benefits to service innovation. Firstly, the most important are when you focus on the customer job, what the customer would like to get it done, so your understanding of customer value will go further than the general solution which can solve the current problem but you will get better understanding from the core

problem, what bothering the customer, why the customer needs. These will cause the service provider to create the new services as radical innovation. For example, in the higher educational institute in each semester during the registration process, it was a long line of the student who queue up to register at the counter. So, if we focus on the customer job, the officer will improve the service delivery system by offering the registration online or payment online instead of increase working for staff at the counter. Second, when we focus on the customer job, the customer will show their need even if many experts say that customers do not know what they need and cannot express their need, but this is not true if the focus is on the customer job. Customer knows very well what they are trying to get their job done and can explain how they measure the success of the job. Third, a focus on the customer job provides a broader and deeper understanding of customer needs to guide service innovation, in particular, step to get a job done which is difficult to satisfy, it may present the opportunities to service provider. Fourth, the service provider gains a better understanding of substitutes and competitive threats and innovate other services to against them by not only services can complete services. Finally, a focus on the customer job helps the service provider to discover innovation opportunity. Once they understand the type of information from customers, it is much better to position to create services that customer really value and it will be positioned for market leadership.

Service innovation in higher education institute interacts with individual customers, student, and society through value propositions. Service innovation has become more necessary in order to respond and offer the way to the changing global expectations and customer needs in the higher education industry. The need for service innovation can also be referred to the growth of service industry which now

widely expanded and shift to develop new offering which is more attractive to the current and new group of customers. For instance, in the higher education industry, many conventional universities are now struggling to bring into their customer network, many potential students who may not want to enroll in the traditional class-based, they are looking for the new way of learning, flexible learning systems such as distance or online education, module-based tutoring are the example of new innovation in the universities. Similarly, specialized institutions such as technological university can adopt innovative strategies of introducing new course offerings, like information and communication technology (ICT), business innovation, digital marketing, biomedicine, bioengineering, nanotechnology, biotechnology, medical engineering, which are not found in the traditional universities and also invest a big budget in the provision of state-of-the-art-facilities to attract new candidates and to positively skew service quality perception of existing students .

The expectation's today's students are increasing and combined with the demand of lifelong learning, which affected to the interface between the higher education institutions and students are more complex than before. The institutions of higher education could be more focus and more effort to the operation since now a day the higher education customers, especially the students expect better all dimensions of service quality: tangibles, reliability, responsiveness, assurance and empathy. The growing of the competition in the market now support and promote service innovation to become a success. Higher education institutions that foster innovative service stand to gain a competitive advantage because service innovation can help further their capabilities in value creation and provision to future customers: students, employees, and society, by delivering better products and services which

could get a positive impact on service quality perception of those customers. The higher education institutions required adaptive innovators to drive innovation and compete in the globalized higher education industry.

The higher education institutions have an impact on the quality of life by facilitating through innovation. For innovation to be meaningful in higher education institutions, new skills are required for incorporation into the service delivery process. Panesar and Markeset (2008) identified different service innovation drivers, innovation process activities and develop a framework for industrial service innovation management and coordination. The study involved the collection of information and data from Norwegian Oil and gas (O&G) industry and conduct by the survey. So the finding indicates that the market needs are considered the most important innovation process driver, feedback from the customers is the most important activity to encourage service innovations, the return of investments is the most important decision-making factor in evaluating innovation feasibility. Employees are the most important source of innovation ideas and the involvement of customer, employees, and suppliers in the innovation process become increasingly important. The proposed framework for service innovation management and coordination provides a structured approach to managing industrial service innovations to practitioners.

Chae (2012) used the complexity theory (Kauffman's NK model in biology and organizational ambidexterity in organization science) and develop a novel perspective on service innovation as an evolutionary process which is interactive, local, unpredictable and emergent. The study proposed the typology of service innovation which included eight different strategies orientation of service innovation.

According to the evolutionary view, new service offering co-evolve with existing tangible and intangible materials both within and outside service provider. Service exists from the recombination or reconfiguration of diverse resources and contexts from the service provider, customer and another economic actor which the recombination or reconfiguration process effect the balance of mutation and crossover, is a key for business growth and customer service experience.

Shekar (2007) developed a framework of New Service Development Process and tests it in order to create a new model for the first stage of service development. This study provides the NuServ model of service development which is a systematic process guide to service managers and providers, for developing and improving service systematically. This framework was applied and tested in four cases studies with a local government in New Zealand. It is a tool to help service development by providing direction and review point for decision-making and suggesting when and how to incorporate users and staff in the development process. The result shows that service development benefits both users and service staff since they provided the requirement for the new service their perspective. The NuServe Model shows the nature and intensity of user and service staff involvement at a various sub-stages of the development process. The input starts with providing information and proceeds quickly to service usage assessment, needs analysis, service idea generation and so on. The model proved extremely useful to inform users and service staff about their contributions and role in the process of service development, enhancing communication, cooperation, and motivation. This model is different from the others because most of the earlier models are staged with the problem description but NuServe model begins with service development strategy and then goes into problem

identification which the initial sub-stage of strategy development was found to be

critical to direct development, it focus and ensure that it met the overall vision of the

organization and a match with the portfolio of service. Another difference between

NuServ model and another model is the presence of the sub-stage of need analysis

which is emphasized a user-oriented approach to service development.

Table 4: Three Stages of Customer Innovation

	Idea Generation and Development	Design, Testing and Refinement	Commercialization
Interacting entities	Organization and customer	Organization and products and services	Products and services, customers
Type of customer innovation	Customer definition, customer information analysis, customer communication	Business process	Products and services, customer interaction
Challenges	Segmentation, information overload, privacy and security issues	System and process transformation	Segmentation, knowledge transfer, communication tools
Checkpoints	Are you sub-segmenting?	Do you know your existing system and capabilities?	Do you know for whom you develop customizable products?
	Do you understand the risk of privacy and security associated with customer information analysis?		Do you have engineers who can understand users' feedback?

Source: Desouza, Awazu, Jha, Caroline & Kim, 2008

Desouza, Awazu, Jha and Kim (2008) provided a typology for customer

innovation, describes how to involve customers in the innovation process, and offers

guidelines for shifting organizational structure and emphasis toward customer driven

innovation in order to enable continual sustainable innovation.

Customer involvement in information gathering is minimal since most of the

data needed to generate information are readily available. Since today's competitive

marketplace is increasing, so the organization need to innovate in partnership with

their customers or even with their competitors. They are changing from "innovating

for customers" to be "innovating with customers" and involving customers in a

process of "knowledge co-creation". As these customers become increasingly

connected to the firm and other customers, they are becoming partners in

product/service innovation. The smart organizations have begun to consider and tap

into their lead users who proposed information and it will become a knowledge that can help an organization has a better plan for new product and service developments and the improvement of existing products and services. Customer innovation has become an essential strategy for organizational survival. Innovation can come from how the organization interacts with their customers by identifying, analyzing and communicating with them, incorporating them into existing innovation processes and encouraging customers to engage in improving existing products and services. The organization needs to collect all information and ideas from the customer which these ideas are normally more creative than the ideas from the experts but are more difficult to implement than the ideas from professionals. Experts may be limited their imagination by their expertise, however, customer information analysis is critical to understanding and implement. The organization can improve their products and services by listen to the customer's ideas and check the possibility of improvement by discussing with the professionals or experts.

The customer innovation program is based on systematic interaction among the organization, products and services, and customers.

Table 5: Customer-Driven Innovation versus Older Paradigms of Customer-Centered

and Customer-Focused Innovation

	Customer-Driven Innovation	Customer-Centered Innovation	Customer-Focused Innovation
Central entity	Customer	Customer and organization	Organization
Degree of customer involvement	Innovation *by* customers	Innovation *with* customers	Innovation *for* customers
Role of organization	Coordinator	Communicator	Innovator
Type of innovation	Dynamic innovation	Open innovation	Closed innovation
Degree of control	Impossible to control	Difficult to control	Easy to control
Degree of coordination	Emergent coordination	Difficult to coordinate	Easy to coordinate
Critical innovation stage	Commercialization (Ideas are over-generated and developed, but difficult to commercialize)	Idea development (Ideas are abundant, but difficult to develop)	Idea generation (Ideas are scarce)
Types of innovation to focus on	Products and services, output interaction; interaction with products and services	Communication with customers; customer interaction with organization	Customer segmentation and customer analysis
Critical issues with innovation types	"Sticky" and tacit knowledge transfer requires high levels of human interaction	Investment in infrastructure	Analysis must be ongoing
	Customers must be segmented for proper analysis	High-quality communication needed	Systems must be integrated
		Risk of copycats	Information overload possible

Source: Desouza, Awazu, Jha, Caroline & Kim, (2008)

From table 5, shows the difference aspect between Customer-Driven

Innovation, Customer-Centered Innovation, and Customer-Focused Innovation. Since

customers are the key factor to drive innovation in the product and service industry,

but the role of the customer in the customer-driven innovation is completely strong

and dynamic. Customers involve strongly into the innovation process and there are

various ideas are generated, but it is hard to commercialize those ideas. The role of

customer and organization in the customer-centered innovation is more flexible since

the high-quality communication can help to facilitate the customer interaction through

the idea development and increase the possibility of idea commercializing. Because,

this paradigm customer and organization are working and support each other in a way

to develop and implement their ideas, and commercialize. The last paradigm is

customer-focused innovation is a close innovation since the organization plays the

role in controlling all process and just only on organization side to generate idea, it is

critical when the experts who had experience and rely on the theory might not be able to generate their ideas. Then for our study, we concern about the role of the customer that will involve to the new student service development process. We plan to work with the customers (students) and communicate and facilitate them all along the idea generation process, it will be two-way communication and innovation "with customer" paradigm.

Sundbo (2002) presented the theoretical model in order to position service consideration both the standardization or customization of service and the use of technology in the production process. The incident of the technology can vary with the type of service in the production process, from knowledge-intensive services to labor-intensive services. Technology help to manage the firm's knowledge resource cost control and increased productivity which is a key element in the production process such as information on markets, products, customers, and transactions effectively.

The globalization affects at a micro level of the market such as the higher education institutions and universities which are attempting to provide a high-quality program to students and to attract a large number of potential students in the educational market. The higher education institutions are facing high competition in a local and international market due to globalization and because of rapidly changing technologies and increasing demand for quality education at an affordable price and convenience. The global society realizes the fact that the innovation is one of the most important tools for stay ahead and consequently, service innovation can help to gain high importance, especially in the educational industry.

There is an opportunity for the Higher education institutions to apply service innovation framework to support every part of their mission and service innovation frameworks can be applied in the higher education system to improve the overall development process. The areas of application involve research, curriculum development, academic services (teaching-learning process), alumni service, formulation and development of strategic plan, administrative services (student and alumni), access to potential customers and other stakeholder, library services, development programs etc.

The implementation of Service innovation framework initiative and is not an easy task since there is a various implementation challenge at a higher education institution. Lack of awareness and learning about service innovation is one obstacle for the service innovation implementation process, the involved people do not know what could help them to overcome their business problems and they never realize that service innovation is a solution. Face-to-face interaction is the other key obstacle since it is not easy for staff or co-worker to discuss their problems in front of each other, uncertainty reaction or uncontrolled situation maybe make them feel insecure to discuss face-to-face. Organization culture can staff to feel more comfortable and team building activity can make it easily to talk about general of work or even the problems at work. Collaboration and trust is a powerful key message to help service innovation take place quickly. The adoption of new system provides resistance from staff and service provider/ developer, in general people will have a reaction to a change. It is important to turn the negative reaction to a positive way of implementation.

Applying a service innovation framework in higher education will give some advantages to the institution. In the recent years, the education institutions are looking

forward to the growth in form of online courses, cyber colleges, and virtual universities around the world which provide enormous opportunity for the potential students. Service innovation framework can be used to support educational administration, which in turn support teaching and learning. The education institution will be able to provide better educational facilities, administrative services, strategic planning process, student retentions, teaching-learning process, cost-effectiveness, data transfer, collaboration, research, faculty development, admissions, expand new web-based offering; students and alumni services, research process curriculum development, work analysis etc.

Den Hertog, Van der Aa and De Jong (2010) proposed a conceptual framework for managing service innovation by proposing six dynamic service innovation capabilities. This framework is an integrated model of service innovation that covers all the possible dimensions where service innovation can take place. This conceptual paper shows the current understanding of service innovation in two important ways. First, it introduced a six-dimensional service innovation model and proposed an integrative model that covers the six possible dimensions of service innovation which building on the contributions from these various disciplines and backgrounds. Second, it contributed by applying and operationalising the dynamic capabilities view (DCV) approach specifically to a services context and identified a set of dynamic capabilities which service organization can focus on the creation and realization of innovations. These service dimensions lead, individually but most likely in combination, to one or more new service functions that are new to the firm.
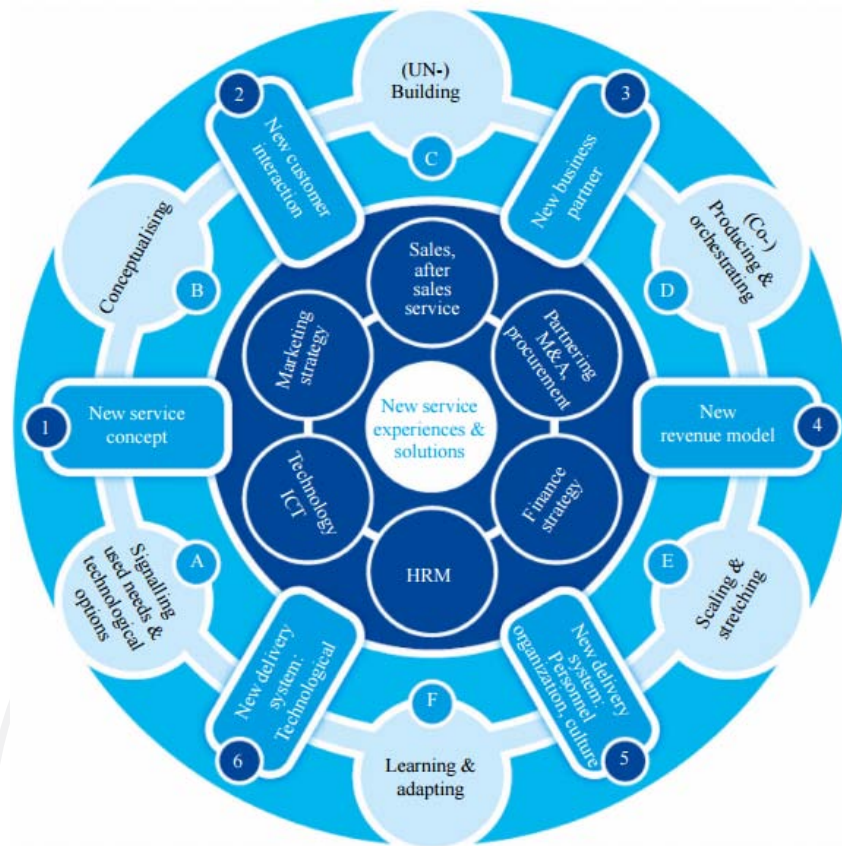
Figure 6: Six Dimensional Model of Service Innovation and the (Dynamic)

Capabilities for Realizing New Service Experience and Solution

Source: Aung, M. (2000). The Accor multinational hotel chain in an emerging

market: through the lens of the core competency concept. *The Service*

Industries Journal, 20(3), 43-60.

As can be observed from figure 6, it included the creation of new service

experiences and service solutions as the ultimate goal of service innovation of the

6Dimensions-model and has positioned this in the center of the model. The idea that

the essence of producing a service is to provide a solution or an experience can be

traced to several authors Gadrey et al. (1995), Goldstein et al. (2002), Gronroos

(2007), Pine & Gilmore (1999). A new service experience or service solution can

combine a new service, a new service portfolio or new service process which can be

individual or combine a new way of creating value for the customer. These service propositions are focusing on co-creation between the customer and the provider.

Service innovation is a new service experience or service solution that consists of one or several of the following dimensions: new service concept, new customer interaction, new value system/business partners, new revenue model, new organizational or technological service delivery system.

The first dimension is the service concept, also named the service offering Frei (2008). The service concept or offering describes the service value that created by the service provider, which is often a new idea of how to organize a solution to a problem or a need of the customer. Almost all new service concepts are combined elements of service that do exist individually or as part of another service in a new combination or configuration. Examples include telecom provider offering integrated bundles of their various services (telephone, broadband access, and TV). The second dimension is the new customer interaction and the role customer play in the creation of value. The interaction process between the provider and the customer is an important source of innovation. The third dimension is the new value system or set of new business partners, for instance, the actors involved in co-producing a service innovation. New service thus creating and appropriating value are increasingly realized through a combination of service functions provided by a merger of providers, both parties in the value chain, and actors in the wider value network Chesbrough (2003), Gawer & Cusumano (2002), Huston & Sakkab (2006), Jacobides et al. (2006), Tee & Gawer (2009). The fourth dimension is related to new revenue models. A few new service concepts become successful service innovation, especially those service requiring multi-actors to produce and have to find the model which is the appropriate ways to

distribute cost and revenues. Many new service ideas do not match in term of distribution of cost and revenues, for developing the right revenue model to fit a new service concept may require considerable ingenuity. The fifth dimension is the new delivery system: personnel, organization, and culture. It refers to the organizational structure which is needed to allow service worker to perform new jobs properly and to develop and offer innovative service. New service may require new organizational structures, personal capabilities or team skills which are often an important additional dimension in many service innovations originating in other dimensions. The sixth dimension concerns new service delivery system: technological and pinpoints the observation that ICTs (predominantly, but not exclusively) have enabled numerous service innovations ranging from electronic government and e-health to advanced multi-channel management, customization of services, the introduction of self-service concepts, virtual project teams and so on. In the hospitality industry, online booking system and handheld devices are important, but also new kitchen equipment and semi-prepared food.

A service business can innovate using a single dimension or a combination of the several dimensions. The significance of the dimensions as well as the interactions between those dimensions will vary across individual service innovations and firms. For service innovators to be successful in the long run, it is not only being able to successfully launch a service innovation, but to be able to introduce and exploit service innovations repeatedly. This allows service innovators to adapt to their changing environment and stay competitive sustainably.

A service innovation cannot be developed, researched, prototyped and tested in the same ways as physical goods, so mostly to do with two key characteristics of

service innovation. First, its conceptual nature makes it difficult to assess beforehand what will be experienced and what will be delivered for the customers Parasuraman et al. (1985), second, it highly interactive or shared process character Alam (2002), Magnussen et al. (2003). Service innovations are in the first place intangible new ideas or combination of existing ideas that together constitute a new value to the customer. A true creative process in a service offering or service concept starts when signals and first ideas for new services and service combinations have been collected based on through customer interaction and insight into new technological options. This may involve the ability to combine new and existing service elements into an integrated service configuration that is experienced as new to the market. The actual conceptualization and design of service innovation involves detailing, visualizing the service offering gradually and also involve deciding on how the new service offer relates to the strategy of the firm, target audience, intensity and form of customer interaction, the delivery system of the organization, partners needed to bring about the service, pricing and revenue model to be used, sort of service dialogue foreseen in detail, and so on. In practice, this process is mostly responsible for a multidisciplinary project team for bringing an initial idea for an innovative service to life Den Hertog et al (2006), organize support from senior management as increasingly the service innovation processes involves more disciplines IfM and IBM (2008). In the end, these can be about transforming a rough idea for a new service into a viable service offering, so the offering should be understood by colleagues, external partners and recognized by the customer as a useful, valuable new service offer.

The conceptualization is a specific dynamic capability and is typically of importance in service innovation, whereas most dynamic capabilities are discussed in

a manufacturing and technological innovation context. In the service innovation,

literature and service management were mentioned concept development as a step in a

typical new service development process Zomerdijk & Voss (2010). Edvardsson &

Olson (1996) include service design as one of the three core concepts in their holistic

service model. Similarly, Shostack (1984), one of the founders of service

blueprinting, uses the notion of service design and indeed this is one of the methods

which can be used for developing new service innovations. The conceptual

framework for strategically managing service innovation can be different types of

firms, in different industries, firms of different sizes and firms adopting different firm

strategies will most likely master a particular mix of dynamic service innovation

capabilities that is relevant for their type of firm, their type of industry, their size and

is aligned with the particular service strategies chosen. However, this required a tight

formal testing of the proposed conceptual framework in both explorative case studies

and large-scale survey.

  Edvardsson (1997) introduced a strategic development framework and from

his point of view, service development includes the whole process from the beginning

like from idea generation to end process when the firm introduces the offering to the

market.
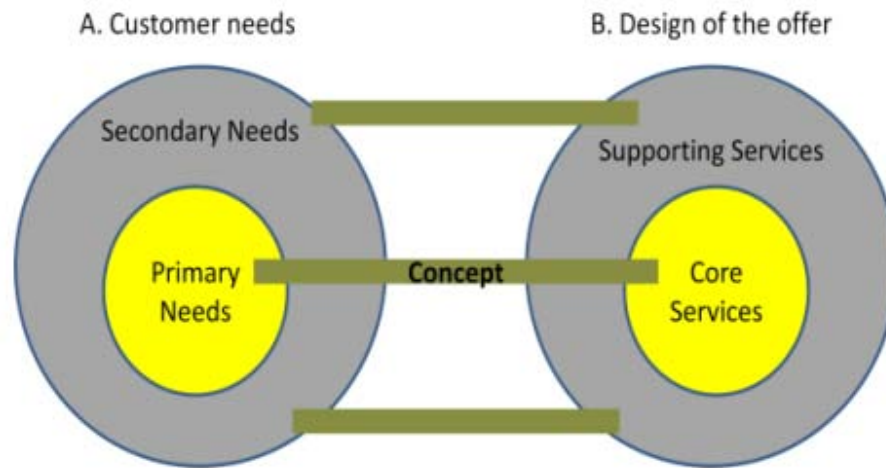
Figure 7: Model of the Service Concept

Source: Edvardsson, B., Gustafsson, G., Johnson, M., & Sanden, B. (2000). *New*

   Service Development and Innovation in the New economy. Studentlitteratur:

   Lund.

The service concept functions like a starting point. It shows an overview and

describes the customers' need, and interprets how each element can be designed to

satisfy these needs. While designing new service it is useful to specific the needs with

respect to extent and nature (primary and secondary needs, core service and

supportive services) the result of a service concept is a prototype of the service, which

describes the actual customer value of the service and its related sub-services

(Edvardsson, 1997).
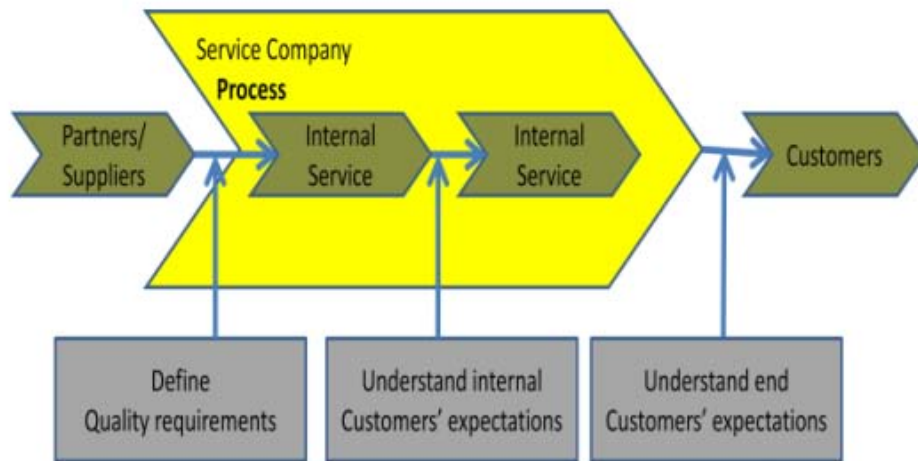
Figure 8: Service Process

Source: Edvardsson, B., Gustafsson, G., Johnson, M., & Sanden, B. (2000). *New*

    Service Development and Innovation in the New economy. Studentlitteratur:

    Lund.

    Service process is part of sequential steps. Since service is a partly co-produced with customers or suppliers, one service firm cannot influence direct control to the over all of the activities. However, a service firm should be able to control the entire process which can be interpreted as a design model for the variety of customer process. it precisely describes micro-processes, standardized and alternative activities, which take place when a customer activates a service process (Edvardsson, 1997).
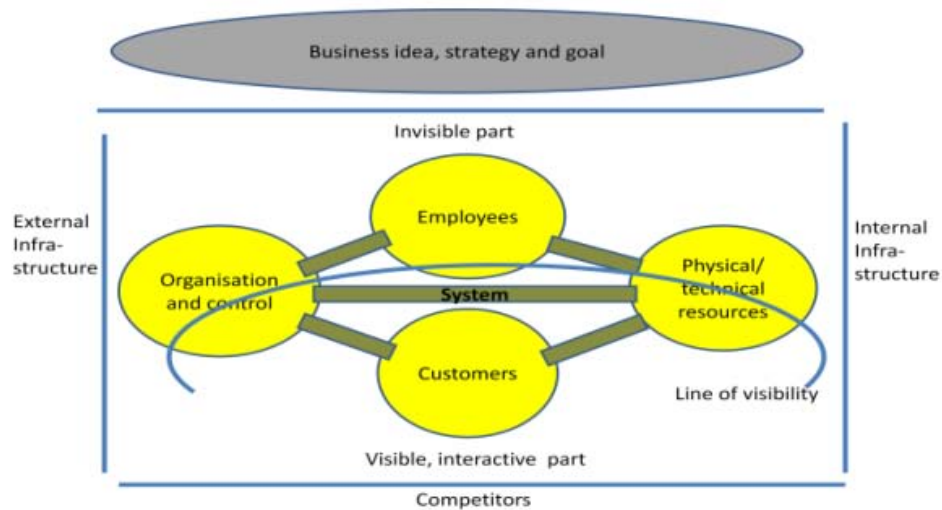
Figure 9: Service System

Source: Edvardsson, B., Gustafsson, G., Johnson, M., & Sanden, B. (2000). *New*

   Service Development and Innovation in the New economy.Studentlitteratur:

   Lund.

   The service system includes all the resources available in order to realize a

service. Generally, the resources can classify as four types; customers, organizational

structure and systems, management and staff and physical/ technical resources. The

service system can be divided in front office and back office operations. Front office

operations refer to the interactive parts of the service which are clearly visible to the

customers. The back office refers to support activities which often invisible for

customers. Based on the ideas of Edvardsson, Toivonen, Tuaminen & Brax designed

a general systematic service innovation model (2007), including more practical focus

elements. Toivonen et al., tried to visualize the value proposition of services and

renamed the service concept in service structure and markets. The most important

elements in relation to this item are the structure (sub-services and their role: core

versus supporting services).

Another more practical point of reference is created by Den Hertog, who introduced a four-dimensional model of service innovation (2000). According to Den Hertog service innovation involves some combinations of the bellow mentioned dimensions of service innovation.
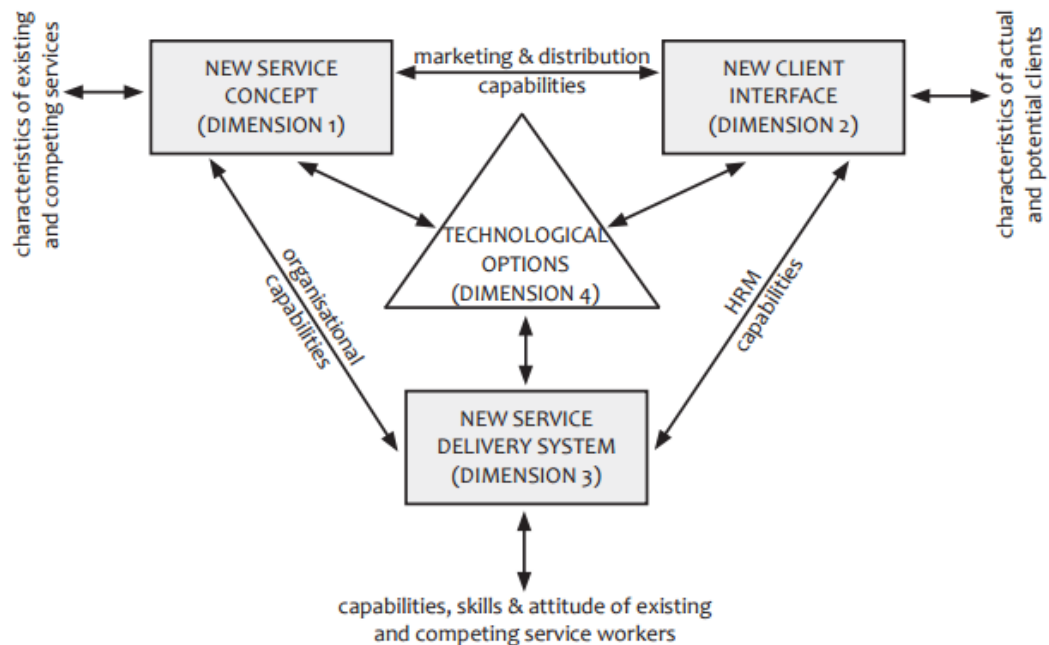
Figure 10: Four-dimensional Model of Service Innovation

Source: Den Hertog, P. (2000). Knowledge-intensive business services as co-producers of innovation. *International Journal Innovation Management*, *4*, 491-504.

The four dimensions of Den Hertog's model are presented; Dimension 1: New service concept, although not all service innovation have a strong novel conceptual element, but conceptual innovation more likely to be found in service setting than in traditional manufacturing firms. Dimension 2: New client interface, a way that service provider interact with the customers can itself be a source of innovation. Product offerings are increasingly marketed and even produced in a customer specific way.

Particularly, in business service customers are often also part and parcel of the production of the service product. Dimension 3: New service delivery system, this dimension has a close relation with empowerment. Internal organizational arrangements have to be managed to allow service workers to perform, to develop and offer innovative services. On the one hand, new service may require a new organizational form, (inter) personal capabilities skills. On the other hand, an organization can be designed and employees can be trained. Dimension 4: Technological options, service innovation is possible without technological innovation. Technology is not always a dimension. However, in practice, there is a wide range of relationship between technology and service innovation. These vary from technology mainly playing a role as a facilitating or enabling factor, to something much closer to supply-push, technology-driven innovation.

Since the globalization and a quickly change effect to every single part of economic and businesses in the world. For micro part as the educational sector, customers' need changes and new technologies are developing and giving an opportunity for businesses to improve and develop their products and services. Innovation is one weapon to create value to businesses which can be adapted to every part, depend on the ability and capability of the firm. Co-creation and collaboration activities are helping to better understand the current customer needs and a hidden need also. New service ideas are generated through co-creation activities and brainstorming activities and will be implemented to operation process. Service firm can create various new business models or create new service innovation concept to the business strategy.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, we described the approach used to answer our research questions. The first section provided an overview of action research, its characteristics, the action research process, the principles of action research, its evolution, the advantage and disadvantage, and also described the role of the action researcher. The second section presented a description of the participants and their respective research setting. We explained the research process and the type of data that was collected at each step in each cycle of action research.

The term of "Action Research" was raised by Lewin (1946) in an article entitled "Action research and minority problems". Lewin stated in the article:

"In the last year and a half, I have contact with a great and variety of organizations, institutions, and individual person who need help in the field of group relation. These people feel themselves are in a fog that they don't know the present situation that they faced, and its effect, and the most important is what they can do", Lewin (1946, p. 201). Lewin stated that Action Research is a spiral of steps which is composed of a circle of planning, action, and the finding results of the action .It is a process that research lead to action and action leads to evaluation and further research. Argyris, Putnam, and Smith (1985) built and use the term "Action Science" in order to make a deliberate contrast to "Mainstream Science" while maintaining to "hard data, explicit inferences, public testing, and systematic theory" (p.18). Today, action research worked closely within specific disciplines, for example, information systems, health care, education, organizations, community engagement, while a few stream of

action research like appreciative inquiry and action learning cut across disciplines
(Dick, 2004, 2010).

Action research in education was an interesting and an attractive choice for
teacher, researcher, administrative staff and other stakeholders in the teaching and
learning environment to consider and apply to their teaching and learning the
technique (Mills, 2011).

Table 6: A Comparison of Traditional Research and Action Research

What?	Traditional Research	Action Research
Who?	Conducted by university professor, scholars, and graduate students on experimental and control groups.	Conducted by teachers and principals on children in their care.
Where?	In environments where variables can be controlled	In schools and classrooms.
How?	Using quantitative method to show, to some predetermined degree of statistical significance, a cause-effect relationship between variables.	Using qualitative methods to describe what is happening and to understand the effect of some educational intervention.
Why?	To report and publish conclusions that can be generalized to larger populations	To take action and effect positive educational change in the specific school environment that was studied.

Source: Miles, I. (1993). Service in the new industrial economy. *Future*, *25*(6), 653-672.

Action research in education defined as the studying process that helps to understand the education situation and improve the quality of the educative process Hensen (1996), Johnson (2012), McTaggart (1997). Action research used a systematic process Dinkelman (1997), McNiff, Lomax & Whitehead (1996), was participatory in nature and it provided new knowledge and understanding about how to improve the educative process and resolve problems. These opportunities included facilitating the professional development educators, increasing researcher empowerment, and bridging the gap between research and practice Johnson (2012), Mills (2011). Educational action research classified like:

1) Individual action research involves working independently on a project or a single problem in classroom. The teacher/ research is seeking solutions to problems by collecting date or may involve looking at student/ participant participation.

2) Collaborative action research involves a group of researcher or teachers work together to identify a problem that might be present in a single classroom. These researchers may be supported by individual outside of the school, such as a university or community partner.

3) School-wide action research generally focuses on issue present all over an entire school or across the school. A team of researchers would work together using school-wide action research to narrow the question, gather and analyze the data, and decide on a plan of action.

4) District-wide research is even more complex and uses more resources, but the result can be great. A district may choose to address a problem to several schools. The involvement of multiple groups can lend energy to the process and create an environment of genuine stakeholders.

3.2 Research Design

For this research, we decided to use action research as a methodology to answer our research questions. The following section begined with a more precise definition of action research, its characteristics, processes, principles and the evolution of action research. We included the advantage and disadvantage and responded to criticism of action research. We then overviewed and supported the approach that was used to answer the research questions and motivating this study. Ultimately, the study was designed to accomplish the objective, to show that "Co-Creation" techniques can help to improve new student services innovation in the university context.

So, before we go further for the detail of our research methodology, we gave a better view by understanding the principle and character of action research in general. We focused on the education sector which related to our study. Actually, action research did not arise in education (Lewin, 1946) or for the educational purpose at the first time but because of its potential, action research was first introduced in social research by John Collier (1945). Then it was applied to the development of education and psychologist Kurt Lewin is considered to be the father of action research. According to Lewin (1946), action research is a parallel action and a creation of a knowledge base for the researcher when they participate in an action of planned change in cooperation with the client/ practitioner.

Regarding what Lewin described, action research and the key outcome of the study is to help the practitioner to learn by observing and involving in the participant's activity through the action research approach. In our study, we also captured the knowledge which was created from the interaction between the participants, observed

how action research facilitate through the co-creation technique to help each participant to better understand the real problem and find out a new solution.

Action research is a practical approach to a professional inquiry to any social situation. The context for professional inquiry might change but the principles and processes involved in action research are the same, regardless the nature of the practice. Several broad characteristics defined Action research (Foster, 1972; Susmans & Evered, 1978; Peters & Robinson, 1984; Argyris et al., 1985; Whyte, 1991; Aguinis, 1993; Coghlan, 1994; Baskerville and Wood-Harper, 1996; Eden & Huxham, 1996; Checkland & Holwell, 1998; Greenwood & Levin, 1998; Gummesson, 2000; McDonagh & Coghlan, 2001): Action Research focuses on research in action, rather than research about action. Action research uses a scientific approach to studying the important issues with those who experience these issues directly by works through a cyclical four-step process: planning, taking action and evaluating the action, leading to further planning and so on. Secondly, Action Research is participative. So the participants of the system participate actively in the cyclical process which contrasts from traditional research. Third, Action research is research which is happening at the same time with action. The goal is to make an action more effective during create the knowledge. Alternatively, an action for the purpose of learning helps people see the system so that it can change, as "Lewin famously put it, "If you want truly to understand something, try to change it".

French and Bell, (1999; McKay & Marshall, 2001; Stringer, 2007) explained the methodological forms of Action research as the cycle involves gathering information, exploring and analyzing the information, and taking action to change the system; when the system responds to the action, new information and learning get

generated and the cycle continues until the goals of the research have been met. Finally, Action research is both a sequence of events and an approach to problem solving.

In action research, the researchers took action. Action researchers were not an observer in the process, they were actively working at making it happen.

Action research is interactive. It requires co-operation between the researchers and the participant to work together on their issue. Action research aims at developing holistic understanding. Action research is known by many names, including participatory research, collaborative inquiry, action learning, and contextual action research, but all are different depend on the content. The simple definition is "Learning by doing" is a group of people to discuss and identify their problems, think and find out the way to solve it, see how it worked if not satisfied, try again. There are many ways to conduct research. Particularly, in the field of education action research is very popular and often uses to collect information that's used to explore topics of teaching, curriculum development and student behavior in the classroom. There are many methods of teaching in the classroom, but action research works very well because the cycle offers an opportunity for continued reflection and repeat many times until the outcome is satisfied.

Anyway, the movement of action research continually moved as a loop depending on the purpose of each action which the researcher analyzed and planned for next movement. Stringer (2007) characterized the basic action research routine as "look, think, act" because action research is more likely responsive to the situation and a need for responsiveness is one of the most reasons that almost of researchers choose action research to be used as research methodology. And the participation is

another reason that has been concerned by some researcher. The participation
generates many useful actions from all participants if they are committed and desired
to change the outcome and provide a better solution.

Fundamentally, action research was based on the qualitative research
paradigm which aimed to get a better understanding and clarified the issues or
problem which people were facing and how things were happening more than focused
on what was happening. It did not mean that the action research was separated
completely from quantitative research because quantitative was a part of the
knowledge that needed to be incorporated into the study but it was not in the main of
the process. There were various ways for organizational strategists to facilitate shared
understanding of perspectives, insights, and opportunities.

Creswell (2009) offered a helpful scheme by differentiating among researcher
worldviews as opposed to differentiating among methodological knowledge claims.
The notion of worldview suits action research for three reasons: First, action research
can be conducted in a manner consistent with a variety of worldviews; secondly,
worldviews combine, ethics, politics, and knowledge; and finally, worldviews guide
to action. Creswell (2009) described four researcher worldviews: Postpositivism,
constructivism, advocacy/participatory, and pragmatism (p.6). The postpositivist
researcher is objective and seeks truth and relevance by conducting experiments that
test theories of cause and effect. The constructivist researcher recognizes that their
own history and culture shape the interpretation of data. They allow theories to
develop inductively through an exchange of meaning with research participants.
Researchers adopting and advocacy/participatory worldview hold a premise that
people are constrained by social systems, power structures, historical context.

Therefore, an inquiry cannot be disentangled from politics; research exists to bring hidden, unjust structures out into the open so that they can be changed. Lastly, the researcher holding a pragmatist worldview focuses on application and problem solving. The pragmatist does not start with a commitment to one system of philosophy or methodology, but rather views "truth" as what works in a given context at a given time (Creswell, 2009).

Table 7: Four Worldviews

Postpositivism	Constructivism
• Determination	• Understanding
• Reductionism	• Multiple participant meanings
• Empirical observation and measurement	• Social and historical construction
• Theory verification	• Theory generation
Transformative	Pragmatism
• Political	• Consequences of actions
• Power and justice oriented	• Problem-centered
• Collaborative	• Pluralistic
• Change-oriented	• Real-world practice oriented

Source: Creswell, J. W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Method Approaches*. Los Angeles: Sage.

In this study, we were taking a pragmatist worldview since the researchers were interested in a particular issue in the university context and we tested with participants a potential solution. A clearly understanding of that issue happened through the co-creation technique that used to facilitate and helped to generate new ideas of the solution. Researchers were interested in getting a better understanding about the customer's pain points as student service issued and researchers used different co-creation techniques to support service innovation in the university context. Researchers focused on the co-creation process all along the study, we reflected the result of each cycle of action research to better improve and helped to plan for next cycle until the results were satisfied.

3.2.1 Principles of Action Research

Action research is a form of doing research which tended to have an action and research outcome. The researcher followed a cycle or spiral which consisted of planning, acting and reviewing the results. The cycle will be repeated again if the results were not satisfying or cannot provide the best solution for that issues or problems. Action research is in most effective forms, is phenomenological which is focusing on people's actual lived experience or reality, interpretive which is focusing on their interpretation of art and activities, and hermeneutic which is incorporating the meaning people make of events in their lives. The information are provided by the stakeholders who are centrally affected by the issues or problems, the investigation helps explore their experience and get a better understanding and clarify and use these understanding to construct the effective solution to the study focusing problems.

Stringer (2007) defined four categories of working principle for action research: relationship, communication, participation, and inclusion. This element can help practitioners to better understand and create the activities. The basic action research principle involves identifying problem issues, imagining a possible solution, trying it out, evaluating it (did it work?), if not try the new possible solution again and again.
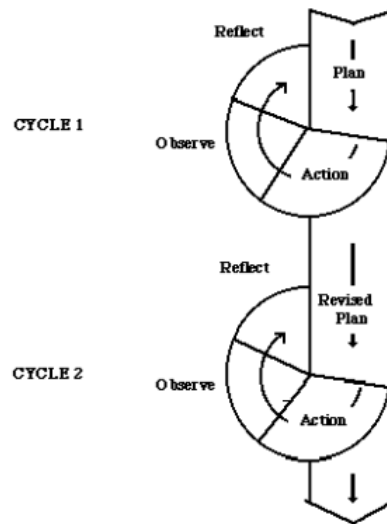
Figure 11: Simple Action Research Model

Source: Stringer, E. (2007). *Action Research* (3rd ed.). Los Angeles: Sage.

The action research can be classified as four steps, the cycle combined plan, action, observe and reflect. Usually, the cycle begins with the planning of the study problems, how to solve the problems. And, after planned the detail of the study method or tool to use for next step, the plan can be acted by the participant through the several of activities or approaches. During the action, the researcher can act as an observer and facilitator, to facilitate and support the learning and creating new knowledge among the participants. The last step of this cycle is the reflection of all processes and how/ or what can apply to the next cycle. The cycle of action research can repeat again until the researcher satisfied for the outcome of the study or until find out the solution of the studied problem.
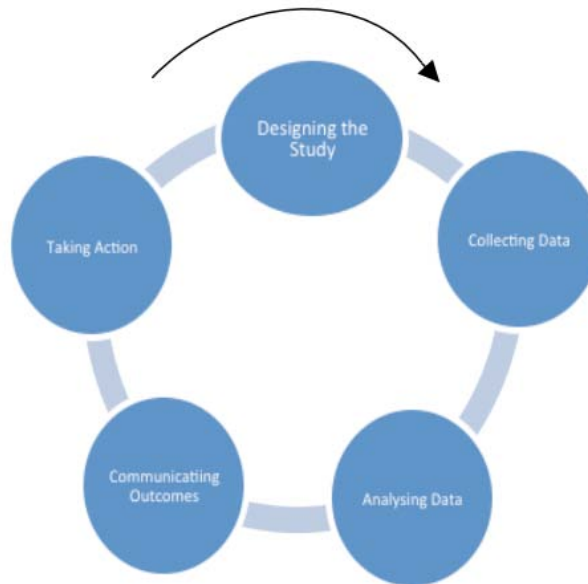
Figure 12: Action Research Cycle

Source: Stringer, E. (2007). *Action Research* (3rd ed.). Los Angeles: Sage.

3.2.2 Types of Action Research

While there were various methods to conduct action research and also various types of action research in the fields of education. As below in figure 13, Grundy (1982) proposed three difference models of action research: technical, practical (also called interactive), and emancipatory;

1) Technical action research: typically undertaken by individual practitioners on a relatively short-term basis and aimed at making an effectiveness and efficiency of the existing situation. This approach was focus on the participation of the client; the cycle consisted of four steps: plan, act, observe and reflect. The understanding of action research as something done by the clients, not something done by researcher.

2) Practical action research (Interactive action research): it was designed to promote teachers' professionalism. It was a "reflection-on-action" and was an activity of understanding and interpreting social situations with a view to their improvement.

3) Emancipatory action research: it seeks to develop their understanding of illegitimate structural and interpersonal constraints that were preventing the exercise of their autonomy and freedom.

Whereas emancipatory approaches of action research offer helped the researchers reduced their roles to a purely technical form of support. It was mainly measured by the overall degree of the practitioners' personal responsibility.
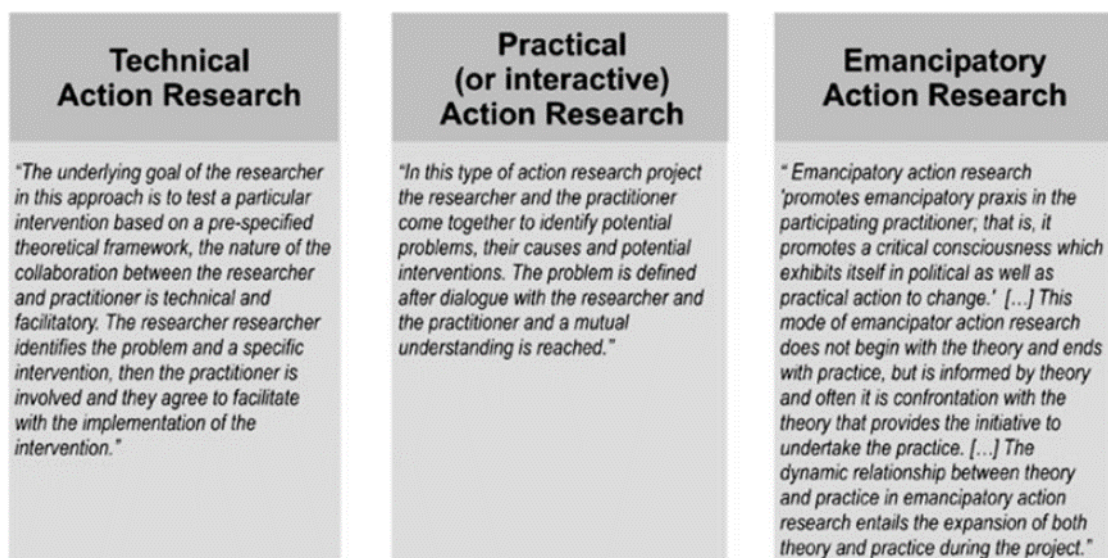
Figure 13: Three Models of Action Research

Source: Based on Grundy (1982), illustrated by quotes from Masters (1995).
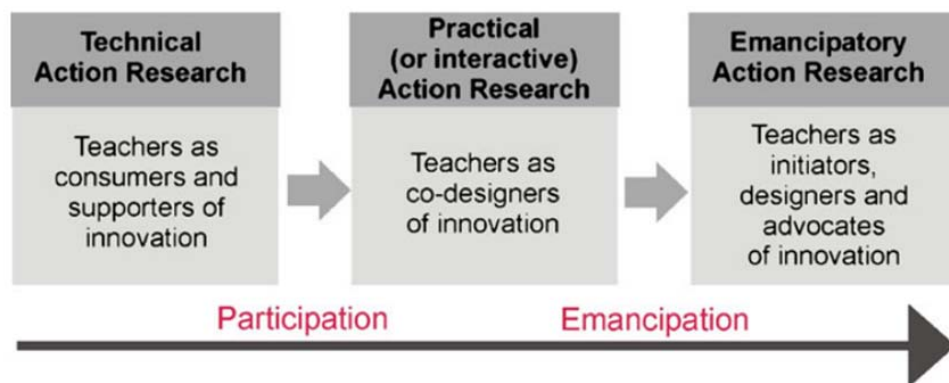
Figure 14: Professional and Personal Development Progressing through an Ongoing

Change through different Modes of Action Research

Source: Eilks, I., & Markic, S. (2011). Effect of a long-term participatory action

research project on science teachers' professional development.

EurasiaJournal of Mathematics, Science and Technology Education, *7*(3),

149-160.

Eilks et al (2010) and Eilks and Markic (2011), described that Grundy's

categorization seemed to lend itself to a model of professional development. It tended

to be interactive mode which caused by low self-confidence level among the

researcher and missing competencies in the beginning.

By individual working with a group of people or as a community of practices

in order to improve the way people address the problem and find the solution. Action

research strategy's purpose was to solve particular problems and created the guideline

for best practices. Since action research was a reflective process of progressive

problem's solving which can be included in research involving working with teams or

a particular group of people as "community of practice" to look at the way that people

addressed issues and solved problems. The use of action research helped the

organization to look at a way to improve their strategies, practiced and gained a better

knowledge of their marketplace. The key to understanding action research was to

realize from the starting point that the researcher was involved in the research as a

participant, not just as an observer.

There are many methods that used to collect information in action research.

Some of the methods include:

1) Observing individuals or groups

2) Using audio or video recording

3) Using structured or semi-structured interviews

4) Taking notes

5) Using analytic memo

6) Using or taking photography

7) Distributing surveys or questionnaires

3.2.3 The Advantage and Disadvantage of Action Research

There were many reasons why the researcher chooses to do action research;

we described the advantage and disadvantage of action research in table 8;

Table 8: The Advantage and Disadvantage of Action Research

The Advantage	The Disadvantage
Used in work or community situation	Non-common research method
Offered a chance and research opportunity to improve the professional practice	There are difference role and relationship between researcher and participants
Helped researchers to increase their learning capability	Hard to do and required many effort and cost
Created knowledge based on inquiries conducted within specific and practical contexts	Time consuming, more work to set up
Collaboration approach between researcher and client	Researchers might not get any credit from doing action research
	Hard to report, need to justify overall of the approach, not to justify what you do

(Continued)

Table 8 (Continued): The Advantage and Disadvantage of Action Research

The Advantage	The Disadvantage
	Demand responsiveness and flexibility, creativity, and innovative aspects
	Raised a risk of the researcher becoming over-involved in the situation

The advantages and disadvantages of action research helped researchers to make a decision before they decided to choose action research method as their research methodology. There were two ways which help to reduce the risk of doing action research; firstly researchers needed to know the overall methodology before started. Because at least researchers knew how to start and checked that it was defensible. Secondly, justified the methodology carefully in the final thesis. Carefully explained the reasons for using action research, data collection and the specific method. Researchers needed to concern about the comments or any advice of another researcher.

3.2.4 Role of the Action Researcher

In action research the person who was called the researcher, was not the person who did the research but he or she was the resource person and became a facilitator or consultant who acted as a catalyst to assist stakeholders in defining their problems clearly and supported them to work toward effective solutions. A group of community workers characterized their community-based work in this way (Kickett, McCauley, & Stringer, 1986):

1) You were at the research place as a catalyst.

2) Your role was not to observe or impose but to stimulate people to change.

3) The important process of action research was not the result but it is the process of how things were done.

4) The key was to facilitate people to analyze their situations, considered finding, planned how to keep the core requirement, and developed their own solution for their issues.

5) Enabled people to examine several courses of action and the possible result or consequence of each option. The researcher assisted in implementing the plan which had been selected.

6) The researcher was not an advocate for the group for which he or she worked.

7) The researcher focused on human development, not focus on only the solutions of problems.

When the researcher focused on human development and worked with people, we worked as the practitioners who needed to create the environment that encouraged them to mobilize their energy, engage their eagerness and generate activity that can be productively applied to the solution seeking process for their problems. Action research was the way to develop and maintained social and personal interaction, the principle of working was delineated as relationships, communication, participation, and inclusion which helped the practitioner to generate activities that were reachable to the key element of this mode of research. Relationships in action research had a primary interest in establishing and maintaining positive working relationships, which was an express feeling of equality for all participants, maintained harmony, avoided the possible conflicts and resolved the existing conflict. Accepting people as they are,

not what they think they ought to be and encourage personal, cooperative relationships and lastly be a concern to people's feeling was the key element in relationships in action research.

3.3 Action Research Type used for this Study

The researcher decided to use action research as a methodology to answer the research questions. The study was designed to accomplish the objective, to show that "Co-Creation" techniques can help to improve new student services innovation in the university context. In this study, the researcher also would like to capture new knowledge which was created from the interaction between the participants, to observe how action research, facilitated through the co-creation technique, could help each participant to better understand the real problem and find out a new solution.

The researcher analyzed the data from the initial study and identified the problem in the university context, students and university service providers involved in the new student service idea generation which helped co-creating new student services. The initial study showed a gap and a lack of student involvement in the new student service development process. For this experimentation, researchers have designed three co-creation activities for each action research cycle, in order to answer the research questions and find a potential working/tested solution.

For our study, based on Grundy's model (Figure 13), our research methodology was likely to follow the first model "Technical Action Research" Model, because the researcher role focused on testing a particular intervention. The researcher identified the problem and a specific intervention and the practitioners were involved in the implementation of the intervention. As we analyzed the data from the initial study and identified the problem in the university context, students

and university service providers were involved in the new student service innovation which helped creating a new student services pretotyping. We used educational action research and we focused on the individual action research because we were interested in a new solution process for new student service innovation in the university context. The action research cycle can also be regards as a learning cycle (Kolb, 1984). The educator Schon (1983) strongly supports this idea and he mentioned that systematic reflection is an effective way for practitioners to learn. Since, action research is usually participative, this implies a partnership between university service providers and students. The researcher observed and analysed data from the interaction among participants.

3.4 Experimentation Process

In this study, researchers would like to experiment by using a co-creation workshop concept to facilitate and capture new knowledge among participants' interaction. From the initial study, researchers gained an overview of student service perception and expectations, and service provider perception. It showed a gap and a lack of student involvement in the new student service development process. For this experimentation, researchers used three steps the first cycle of action research and used different techniques to facilitate each step in order to answer the research question.

3.4.1 Research Participants

The participants were Thai Graduate students from different majors who were studying at least in the second semester of master programs, in Thai private university in Thailand. They were currently studying and experiencing the student services from the university. Thai university service providers were the main people who developed

and who provided student services and also be part of the participants of this study. Since the researcher found out from the initial study that there was a satisfaction gap between university service providers and students, consequently, the researcher would like to help the university to fill this gap and further develop the customer's relationship by using co-creation techniques. We invited Thai Graduate students and university service providers from the student service related business units to participate in a Co-creation workshop on a voluntary basis. The co-creation workshop facilitated in Thai language and all questionnaires were translated in Thai.

3.4.2 Action Research Design

Each cycle of the action research was designed in;

Step 1: researchers facilitated students to express and summarize their service experience through the use of a customer journey mapping technique which helped students to visually identify and recollect some of the issued and service pain points along their student journey. This mapping showed the involved service providers in each delivery process. It was used for the service improvement process later on. The student did video recording for the summarizing of service experience.

Step 2: researchers built "the empathy" between students and university service providers by giving them a case study about service business issues and the researcher facilitated them to do "role-play". They acted as the opposite roles and shared their feelings among them at the end of this activity. Researchers encouraged them to freely express their ideas and feelings since it helped facilitating their understanding of each other's roles, constraints, and point of view.

Step 3: researchers used storytelling and "LEGO Serious play" techniques for the idea generation process which involved students and service providers to generate

new ideas of student services. The LEGO Serious play helped them turn their ideas into a tangible solution easy to understand among them. The LEGO Serious play activity allowed students and university service providers to co-create potential solutions and new services.

After the first cycle of action research, researchers reflected on the results before starting to plan the second cycle of action research. We learnt from the interactions that happened and evaluate how effective between participants and the Co-creation technique was as an opportunity to increase collaboration between the students and university service providers. We hoped that action research outcome were not only changed how university service providers and students relate to one another, but that it was also answered questions about changes in how each university service providers interacted in the new student service development process, and how best to promote co-creation workshop as a tool to better support new student service innovation.

Table 9: Experimentation Steps, Tools and Techniques

Steps	Participants	Objective	Experiment Technique/ method	Expected outcomes/results	Measurement technique/ criteria
Step 1	-4-5 Thai graduate students -Studying at 2nd semester of Master program -From different majors -By voluntary	-To identify student service problems -To better understand students' pain points -To hear from the customer's voice about non-educational/ teaching issue	-**Activity A**: Student Journey Mapping technique (provided with template) - Video recording of students' service experience.	-Each student provide minimum of positive and negative feedback in each student journey process. -Student journey map -Students share their experience openly - A short video of students' service experience.	-Satisfaction survey to measure the overall satisfaction level from students -Notes taking technique -VDO recording to measure qualitative data (Number of positive and negative feedback) And qualitative data (The impact of positive and negative feedbacks, Emotional expression, engagement)

(Continued)

Table 9 (Continued): Experimentation Steps, Tools and Techniques

Steps	Participants	Objective	Experiment Technique/ method	Expected outcomes/results	Measurement technique/ criteria
Step 2	-Students participants from step 1 -4-5 University service providers from 3 student service related business unit (Library center, Record office, Graduate school)	-To build the "Empathy" among participants -To do "iced- breaking" among participants -To hear student service providers' voice	- Service providers watch the video recorded by students in Step 1 **-Activity B**: The empathy "Role-play" activity, based on a scenario selected from students pain points	-Participant engagement -The empathy atmosphere -Build empathy between participants	-Satisfaction survey to measure the overall satisfaction level from university service providers. -Notes taking technique -"The empathy quotient" questionnaires
Step 3	-Students and university service providers	-To stimulate "New student service idea generation" -To capture new knowledge and new solution of student service problem -To capture novel new student service ideas	- Focus on a selected student problem **-Activity C**: New student service idea pretotyping technique -Service co-creation "LEGO Serious play" - Collective debriefing and feeling sharing (in circle)	-New student service ideas -Participant engagement -Novelty new student service ideas	-"Measurement of ideation effectiveness" questionnaires -Co-creation workshop satisfaction survey -Notes taking technique VDO recording to measure qualitative data

3.5 Data Collection

   3.5.1 Pre-study Data Collection

   In the initial pre-study, researchers aimed to gain an overview and understanding of the customer perception and expectation from the students' side and at the same time researchers explored the understanding and the perceptions of university service providers in the university to have a clear understanding of the current new service development process and practices, and how university service providers perceived their performance. Researchers used "In-person Interview" technique to collect data from both sides, in a pseudorandom manner. We used structured interviews using a list of predetermined questions to be asked. The same questions were asked in the same manner to all participants. Field Notes techniques were used to collect data on "Notes and Reflections After" type to collect the feeling, general impression, and emotional tone after each interview. Audio recordings were used to collect information such as their thoughts, feelings, attitudes, and expectations from the interviewing. The results were also attached at the appendix part.

   3.5.2 Action Research Study Data Collection

   Each action research cycle were divided into three steps which aimed to study and collected data from participants for different purpose while using difference techniques, as described in Table 8;

   Step 1: In this stage, two measurement techniques will be used; quantitative and qualitative. Before starting the workshop, researchers collected data by using a set of the questionnaire as a pre-test in order to measure the overall level of satisfaction of students (Appendix A) and university service providers (Appendix B). Students were first started identifying their positive and negative service experience during

their journey at the university. They used post-it paper all along the student journey map to illustrate the issues they faced. Field notes technique was used to capture their feedback and general expression. On the other hand, videotaping and field notes technique was used to capture their positive and negative feedback, body language, emotional expression, interaction and their engagement. Researchers prepared the criteria of emotional expression and engagement as a checklist while measuring the qualitative result (Emotional expression and engagement checklist are attached in appendix part). Video recording was used to capture the summarized of student service experience journey at the end of this workshop.

Table 10: Emotional Expression and Engagement Criteria

Group………………………..		Date……………………………	
Emotional expression:	Positive:	Excited	
		Joyful	
		Happy	
		Hopeful	
	Negative:	Sadness	
		Boredom	
		Frustration	
		Shyness	
		Uncomfortable	
Engagement:	Positive:	Energize	
		Eagerly	
		Curiosity	
		Courage	
	Negative:	Low interest	
		Ignorance	
		Isolate	
		Angry	

Step 2: Researchers collected data by using "Empathy quotient" as a set of questions that measured the empathy from both sides after they watched video and role-play activities. All along, videotaping was used to capture their body language; it helped researchers to assess their interactions and empathy level.

Step 3: At this stage, researchers aimed to stimulate the new student service idea generation among participants (Students and University service providers) and to assist them to build the pretotyping of new student services for the future education. Field notes, and videotaping were used to capture data in term of body language and interaction. Researchers also measured the new student service ideation effectiveness by focusing on four criteria such as novelty, variety, quality, and quantity. At the end of this step, researchers distributed the post-test questionnaire to all participants to evaluate their overall satisfaction about the co-creation workshop.

Johnson (2012), explained and classified data collection technique for action research; Field Notes: it is the written observation of what researchers see taking place in the classroom. Researchers will observe the feeling, general impression, and emotional tone, and write what we see and reflect after the workshop by spending time for 15-30 minutes to summary what we saw during the workshop. Since we classified in three minor steps of "Act "process of action research, then we used difference data collection technique to collect data and captured new knowledge all along these process. For the first step; researchers used "mapping technique" to collect data from participants. He proposed three types of field notes; "Thick Descriptions During" which involves taking notes while facilitating workshop is taking place. However, few researchers were able to check out during the workshop facilitating because researchers needed to be fully engaged in the facilitating process

and thus were not able to enter an effective researcher/recorder mode during facilitating. The second is "Quick Notes During" it is possible to make quick notes to hold your ideas during researchers facilitate and have a short time to write what they see. The third is "Notes and Reflections After" it can help researchers to record their observations after the workshop or at the end of the day. Researchers are more relaxed, not rushed for time and be able to think and remember much more clearly.

Table 11: Data Sources and Collection Procedures for my Co-creation Workshop

Step	Data Sources	Data Collection
Reflect: Initial study	Participant questions	• In person interview • Field Notes • Audio recording
Plan:	Key findings from initial study	• Notes and audio file from the interview
Action: Step 1: Student Experience Sharing	Participant(only students) questions, reactions and behaviors	• Observation • Field Notes • VDO taping • Student journey mapping • Student Journey Map VDO
Step2: The Empathy Building	Participant(students and service providers) questions, case study, reactions, behaviors	• Observation • Field Notes • VDO taping • Role-play activity

(Continued)

Table 11(Continued): Data Sources and Collection Procedures for my Co-creation

Workshop

Step	Data Sources	Data Collection
Step 3: New Student Service Idea Generation	Participant(students and service providers) questions, case study, reactions, behaviors	• Observation • Field Notes • VDO taping • LEGO serious play set
Observe:	Participant reactions, behaviors	• Observation • Field Notes • VDO taping
Reflect:	The key findings of cycle 1	• Field Notes • VDO taping

3.6 Data Analysis

As researchers separated co-creation workshop in three steps and used multi

data collection technique to collect data and nonverbal data from participants'

interaction. According to Mills (2007), "data analysis is undertaken when researchers

would like to summarize and represent data that have been collected in dependable,

accurate, reliable, correct, and right manner. Researchers interpret research key

findings in order to answer the research questions". Our goal of data analysis was to

interpret the collected data and analyzed for researcher's understanding.

Researchers analyzed data from each step by following the approach below:

Step 1: From quantitative data, researchers focused on the total number of

positive and negative feedback from the student's side. The more feedback that

provided from students had given more opportunity to have better understanding and

pain points from customer's voice. For positive feedbacks will reflect high quality and high satisfaction toward university service providers. On the other hand, negative feedbacks were useful and showed the current issues related to student services. It served as a guideline to lead the student service provider to better improve the student services in the future. The interaction was analyzed for the emotional expression and engagement while participants were involving in the students' experience sharing and student journey mapping. The students recorded the video for five minutes that they summarized their student service experiences.

Step 2: the collected data was analyzed to measure the atmosphere among participants. It was expected that both, students and university service providers gained a better understanding of each other, and helped each other to solve the student service issue and improved new student services in next step of the study.

Step 3: researchers analyzed the pretotyping of new student services and new student service ideas by following four criteria as already mentioned before. Their ideas showed the opportunity and new way of new student service idea generation and what students expected to experience in the new student services development process. At this stage, a pool of new student service ideas helped and beneficial the university by getting new student service ideas for the future. It also helped to demonstrate how student's involvement can support and generate new ideas, new knowledge to universities.

Lastly, we distributed the post-test questionnaire to all participants in order to evaluate their perceived value of co-creation workshop and overall satisfaction. The data from this process helped researchers to better improve the co-creation workshop in term of technique and process for the next cycle of action research. The second

cycle embedded the learning from first cycle and used the same overall approach. We were not sure at this stage how many rounds will be necessary to "perfect" the process, but we run as many rounds as required, while including at each round different students and different university service providers to test the improved approach.

CHAPTER 4

DATA ANALYSIS AND RESEARCH FINDINGS

4.1 Introduction

This chapter presented the data collection and the data analysis processes used for this action research. As described in the research method section, workshops were designed to evaluate how the co-creation process could be used to support novel students services creation. Two types of participants were included in this workshop; Thai graduate students from different majors were selected on a voluntary basis, University service providers from three different business units referred by the head of the business unit based on their involvement with graduate students. The action research process led to three iterative cycles. Each cycle was composed of four steps (Reflect, Plan, Act, and Observe).

4.2 Action Research Cycle 1

4.2.1 Participants

For this first cycle, five Thai graduate students, who were at least on their second semester of study in a Thai Private University, joined the workshop.

Table 12: Students' Demographic of Action Research Cycle 1

	Gender (Male/ female)	Major of study
Student A	Female	Com. Arts
Student B	Female	Com. Arts
Student C	Female	Com. Arts
Student D	Female	Com. Arts
Student E	Male	MBA

Two Thai service providers from the library business unit of the same Thai Private University also joined this workshop.

Table 13: University Service Providers' Demographic of Action Research Cycle 1

	Gender (Male/ female)	Position
Service Provider A	Male	Information Service Officer
Service Provider B	Female	Reference and Electronic Resources Officer

The researchers as well as a video camera man also attended the workshop. Before starting each workshop the researcher explained the purpose of it and then later on facilitated the process of the workshop. Each workshop lasted in average 3 hours.

4.2.2 Reflect (Cycle 1)

The reflect step happened before the workshop happened. The results of the initial study conducted to identify the need for this research (chapter 1.4) served to identifying the gap between the students service expectation (novelty, variety) and the current service provided, as well as the lack of students' understanding and lack of student involvement from the service provider side. These findings led to the planning step of the 1st cycle of action research.

4.2.3 Plan (Cycle 1)

The researchers designed a workshop that could be used to test how using a co-creation approach could help to address the issue previously presented. The workshop was composed of three activities; Activity A, B and C.

| Pre | Activity A | Activity B | Activity C | Post |

Participants:

| Students | Students | Service providers | Students | Service providers |

Technique:

| Experience Sharing | Empathy Role-Play | Co-creation |

Output:

| Student Journey Map | Empathy Level | New Service Ideas |

Data Collection:

| Observation | Survey | VDO recording | Notes Taking |
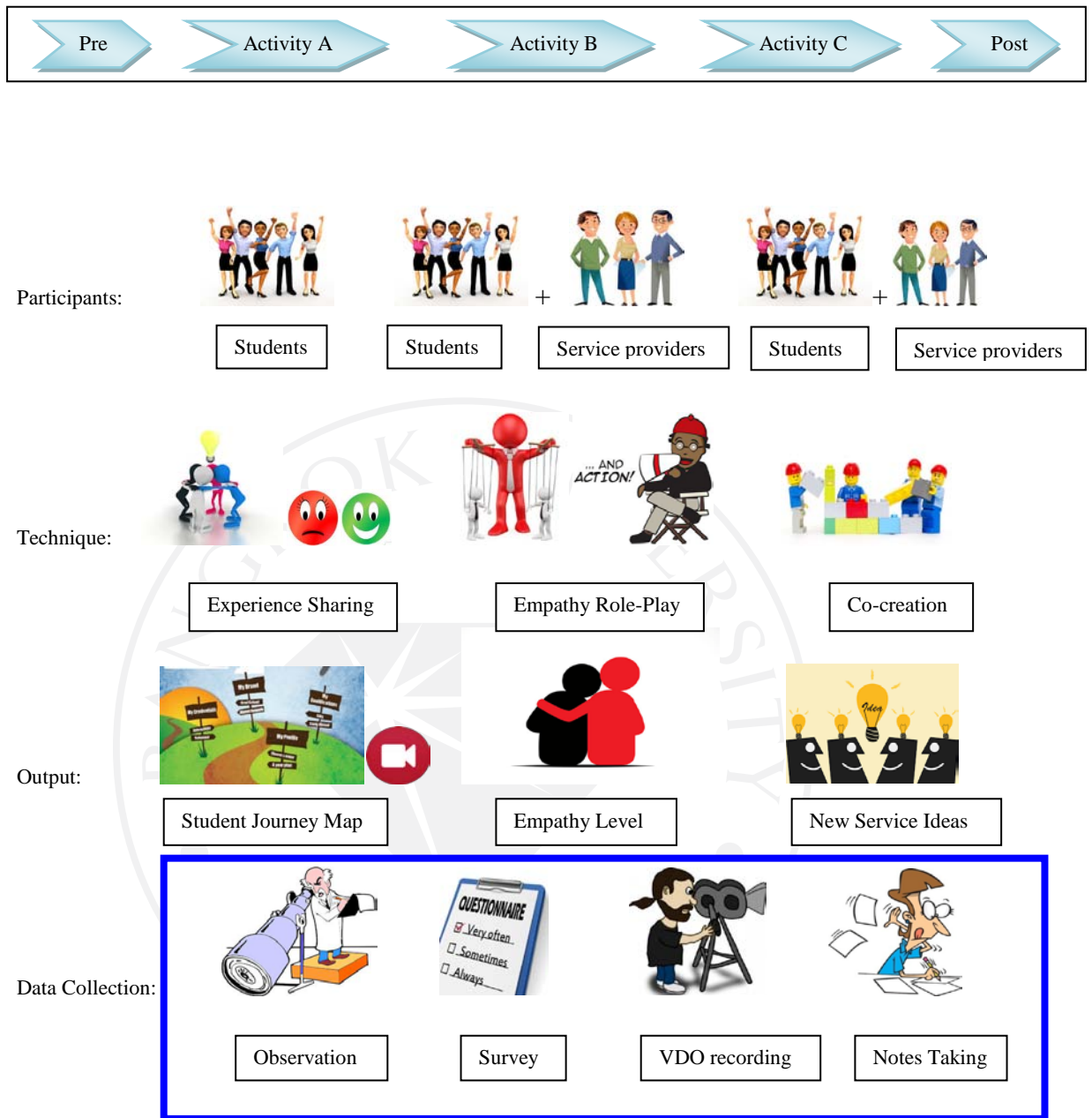
(Continued)

Figure 15: An Overview of Action Research Cycle 1

| Pre | Activity A | Activity B | Activity C | Post |

Variable

Measurement:

Student:

-Overall service satisfaction level Survey

<u>Service Provider:</u>

-Perceived satisfaction level related to service provide to student survey

Student:

-Emotional expression and engagement survey

Student:

-Emotional expression and engagement survey
-The empathy level survey

<u>Service Provider:</u>

-Emotional expression and engagement survey
-The empathy level survey

Student:

-Emotional expression and engagement survey
-Ideation effectiveness

<u>Service provider:</u>

-Emotional expression and engagement survey
-Ideation effectiveness

Student:

-Perceived effectiveness of co-creation process
-Perception toward service provider
-The empathy level generated by co-creation workshop
-Overall satisfaction
-Feedback

<u>Service Provider:</u>

-Perceived effectiveness of co-creation process
-Perception toward service provider
-The empathy level generated by co-creation workshop
-Overall satisfaction
-Feedback

Figure 15 (Continued): An Overview of Action Research Cycle 1

Each activity was described in details in chapter 3.4.

4.2.4 Act (Cycle 1)

4.2.4.1 Student Journey Map (Activity A)

Objective: Activity A aimed at better understanding the overall student's satisfaction level regarding university services provided to them. It aimed to better understand student's pain points (negative feedback) while students were experiencing various university services. Another objective was to encourage students to provide feedbacks and to openly share their experiences with each other, in order to open their mind and listen to each other.

Before the activity started, the researcher explained about the rationale and the objective of this activity to all students, in order to make them concerned and awared of the importance of their feedbacks and comments to university service providers. After, the researcher provided the students with a journey template which showed each student services all along student's life journey in the university. The researcher asked the students to positive and negative feedback particularly comment on the services related to the university service providers who joined in the next action research cycle. Students wrote their feedbacks on different color of post-in paper and posted on each service departments. Since the students represented came from difference majors and their experiences were not the same, the researcher asked them to focus their attention on university service departments that every student already experienced, in order to better receive feedback from everyone. At the end of this activity the students summarized positive and negative feedbacks and did a video recording, in order to later summarize and share student's experience journey to university service providers in activity B.

Figure 16: Action Research Cycle 1: Example of Activity A- Student Journey Map

The researcher separated, in another room, university service providers from the students while students were discussing and sharing their experiences and feedbacks to each other. It helped students feel more comfortable and freely shared their negative feedback without any influence, and fear about sharing openly their opinions.
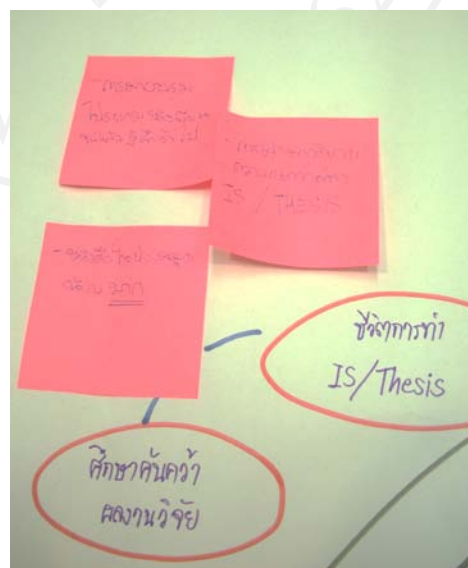
Figure 17: Action Research Cycle 1: Example of Activity A-Student Journey Map,

focused on Student Services from the Library Center
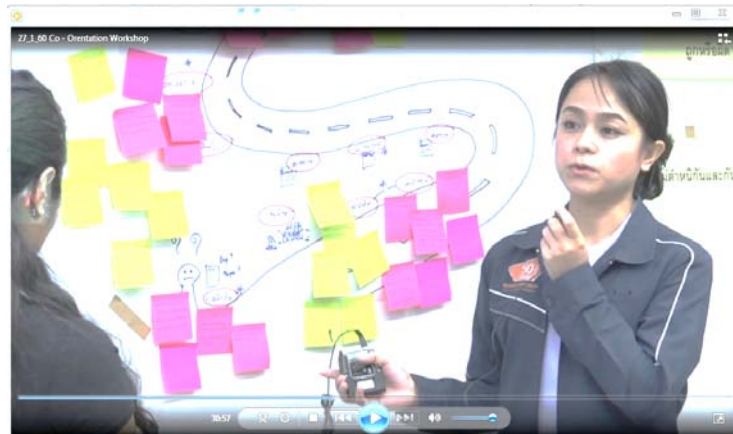
Figure 18: Action Research Cycle 1: Example of Students VDO Recording the

Summary of their Service Journey

4.2.4.2 Empathy Role-Play (Activity B)

Objective: Activity B aimed to create awareness and empathy between

students and university service providers. It aimed to strengthen the relationship

between students and university service providers, and to build empathy in students

and university service providers' mindset before they worked together in the new

student service ideation process (activity C) without any argument or blaming each

other.

In this activity, the researcher showed the summarized student journey map

video to university service providers, in order to create a clear understanding of

students' experiences or pain points before they participated in activity B. After the

video, the researcher selected a situation of student's pain point. All participants had

to perform the switch role-play (the opposite role). Students had to perform like

university service providers who were providing services at the department, and on

the other hand university service providers had to perform like students who were

asking for services. The scenario was selected by the researcher based on the list of

students' pain points from activity A (Student Journey Map) related to library

services. For example, Scenario 1; the library training program was provided to students too late, and not up to date. Scenario 2; the library journal research database was limited and did not support enough the students' research study expectations. Participants were given 5 minutes to prepare their performing roles.

Two rounds of role-play performing were conducted consecutively separated to two teams which combined of three students and one university services, each round lasted for 10-15 minutes. After the performing all participants were asked to form the circle and shared their feelings and what they learned from this activity about each other roles (students versus service providers).

Figure 19: Action Research Cycle 1: Example of Activity B-Empathy Role-Play, focused on Student Services from Library Center

Figure 20: Action research Cycle 1: Example of Activity B-Empathy Role-Play,

formed a circle to reflect after Empathy Role-play Activity

4.2.4.3 New Service Ideation (Activity C)

Objective: Activity C aimed to use the "Co-creation" process to help
capture new knowledge and helped students and university service providers
generated new ideas for new student services. It aimed to help the university service
providers created new value propositions for student services. This activity also aimed
to demonstrate that by using "co-creation process" university service providers and
students can collaboratively co-created new student services ideas.

The researcher expected to see the co-creation process between students and
university service providers, in order to co-create new student services pretotypes
later on. The researcher expected to see novel and various new student service ideas
which helped to create value to the university. The researcher expected to see that all
participants actively engaged in using Lego serious play set which helped them to
make their ideas tangible and easily understandable.

The researcher asked all participants to help each other to build new students
services pretotypes that related to the library services by using Lego serious play. This
activity lasted for 1 hour.

In 1st action research cycle, university service providers and students directly used Lego set to co-create and generate new library service ideas without brainstorming and sharing their idea before prototype building. In activity C, university service providers and students generated new service ideas that related to library center services. New student service ideas were captured by videotaping and showed as below;

1) Students would like to have a big library center with 10 floors of books and in each floor have different design of the furniture and space.

2) Students would like to have a coffee shop inside the library center which will be convenience and look more relaxing place for students.

3) Student would like to have museum which is a place that student can enjoy while studying and reading at the library center.

Figure 21: Action Research Cycle 1: Example of Activity C-Co-creation by using

Lego Serious Play Set

Figure 22: Action Research Cycle 1: Example of Activity C-Co-creation by using

Lego Serious Play Set (Pretotypes)

4.2.5 Observe (Cycle 1)

From activity A, the researcher observed that students provided 21 positive

feedbacks and 21 negative feedbacks (Appendix A). Students focused on their own

experiences. Students were active and eager to express their feelings and experiences

with each other. Most of the students enjoyed this activity. There were some students

who looked so shy at the beginning of the workshop but they more actively

participated to the group activities later on.

The researcher learned that if students were given more time to share their

experience for every service points, more detailed information could be conducted. It

will be very useful information if the researcher would like to send all feedback about

each service department to help service department improve their services later on or

in future research.

From activity B, the researcher observed that students were active and

energized while they were performing their switched roles, but on the other hand

university service providers were not comfortable at the beginning of the activity, but

after the explanation, all participants were openly and joyful to perform their switched roles. Students enjoyed and had the feelings like they were wearing the other people's shoes and even for some students who had not have the experience to contact to this service department before and did not perform too much at the activity, they had a feeling of empathy also. During role-play activity, all participants were attempting to express their feelings and their experiences to their partners. After this activity, the researcher asked them to form the circle and share their feelings about how they felt when they were performing other people's role. They had the empathy feelings among them and they tried to understand each other. At the end, students said that they had gained a better understanding of service provider's role at work and better understood how difficult it was to handle and try to satisfy the students' needs. On the other hand, university service providers said that, they had better understanding now about how students felt when they came to the service department and needed help. University service providers also realized how they needed to have a service mindset and communication skills to better handle with students' problems. All participants had a stronger empathy feeling after this activity.

During activity C the researcher observed that university service providers did not actively participated at the beginning of this activity, not like students. University service providers looked uncomfortable using Lego set to co-create the pretotypes, then the co-creation process was not fully happening. It maybe because of, a gap of the age and the space to use the Lego set might not convenience for everyone to access.

4.3 Action Research Cycle 2

    4.3.1 Participants:

For this second cycle, five Thai graduate students, who were at least on their second

semester of study in a Thai Private University, joined the workshop.

Table 14: Students' Demographic of Action Research Cycle 2

	Gender (Male/ female)	Major of study
Student A	Female	Accounting
Student B	Female	Accounting
Student C	Male	Accounting
Student D	Female	Com. Arts
Student E	Female	Com. Arts

    Two Thai service providers from the record office of the same Thai Private

University also joined this workshop.

Table 15: University Service Providers' Demographic of Action Research Cycle 2

	Gender (Male/ female)	Position
Service Provider A	Female	Student Records Officer
Service Provider B	Female	Student Records Officer

    The researcher as well as a video camera man also attended the workshop.

Before starting each workshop the researcher explained the purpose of it and then

later on facilitated the process of the workshop. This workshop lasted in average 3

hours.

4.3.2 Reflect (Cycle 2)

From Action Research cycle 1, the researcher learned that if in activity A students were given more time sharing their experiences, it might help and encourage students to share their experiences at every service department as much as they can. Consequently, the researcher gave 10 more minutes to students to share their experiences in this action research cycle.

From activity B, the researcher observed that the empathy role-play went well and all participants had strong empathy feelings after that activity, then the researcher used the same technique as in action research cycle 1.

From the activity C, the researcher observed that university service providers were not actively participating at the beginning of this activity, not like students. Then in action research cycle 2, the researcher tried to better explain about the benefits of this activity before starting. It helped encouraging university service providers and students to better co-create and interact among participants. The researcher adjusted the technique by giving them the flipchart board and maker pens to encourage students and university service providers to do brainstorming before co-creating a service solution by using the Lego set. The brainstorming phase helped developing more ideas and helped better sharing of idea by all participants. On the other hand, the researcher provided a long table where every participant can more easily access the Lego set and help them to co-create the pretotypes of a new student service.

4.3.3 Plan (Cycle 2)

The researcher used the same activities and measurements as in action research cycle 1 which was composed of three activities. Only in activity A and C, 10 more minutes and a brainstorming phase were added.

Three activities in Action Research Cycle 2:
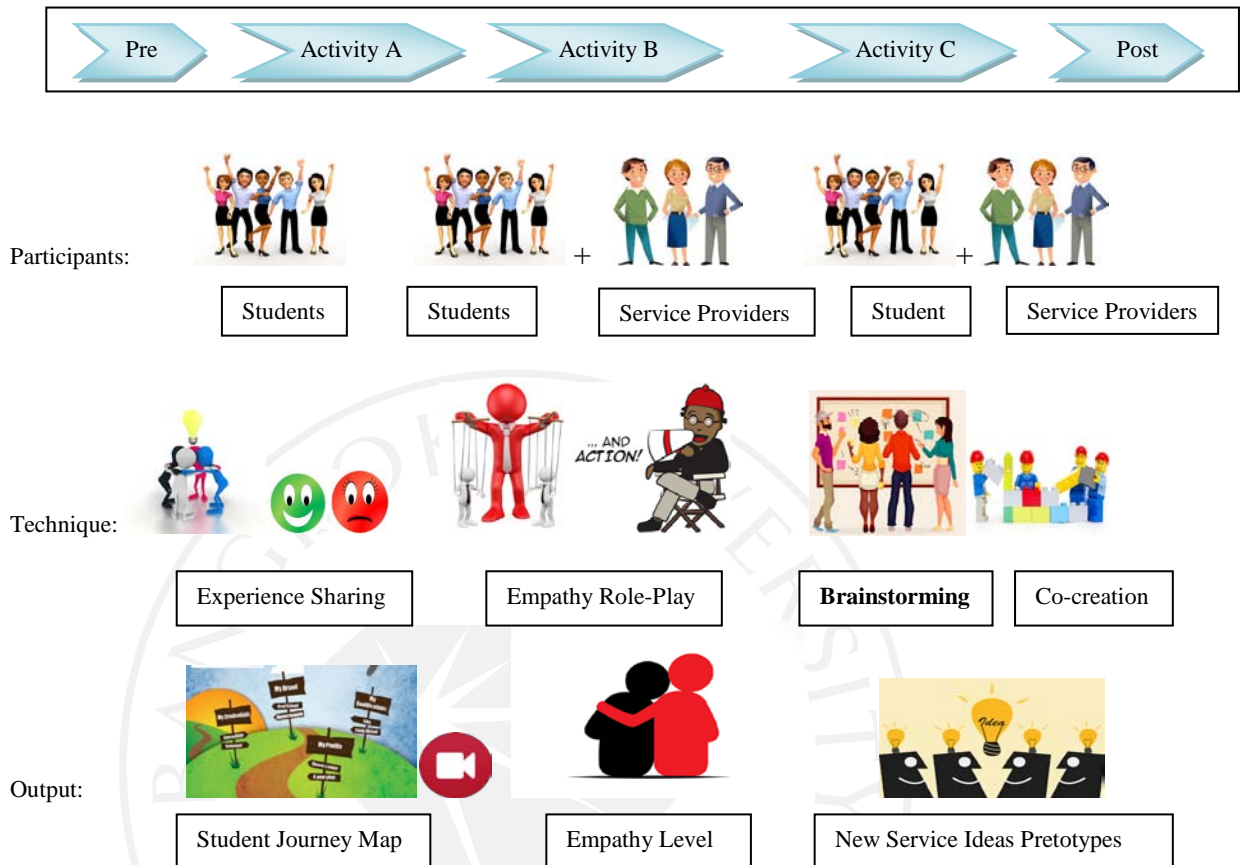
Figure 23: An Overview of Action Research Cycle 2

In this action research cycle 2, the researcher using the same data

collection techniques and measurements as in cycle 1.

Each activity was described in details in chapter 3.4.

4.3.4 Act (Cycle 2)

4.3.4.1 Student Journey Map (Activity A)

Objective: Activity A aimed to better understand the overall student's

satisfaction level regarding university services provided to them. It aimed to better

understand student's pain points (negative feedback) while students were

experiencing various university services. Another objective was to encourage students

to provide feedbacks and to openly share their experiences with each other, in order to open their mind and listen to each other. Students were given 10 more minutes than in action research cycle 1, in order to encourage students to share their experiences as much as they can.

Figure 24: Action Research Cycle 2: Example of Activity A-Student Journey Map, focused on Student Services from The Record Office

4.3.4.2 Empathy Role-Play (Activity B)

Objective: Activity B aimed to create awareness of "The Empathy" between students and university service providers. It aimed to strengthen the relationship between students and university service providers. And lastly, to build the empathy in students and university service providers' mindset before they worked together in the new student service ideation process (activity C) without any argument or blaming each other.

The researcher used the same techniques as in action research cycle 1. In this activity, the researcher provided two scenario of student's pain point that related to

student service provided from the records office. The scenario was selected by the researcher based on the list of students' pain points from activity A (Student Journey Map) for example, Scenario 1; new students experience difficulties in trying to register online. Scenario 2; students did not know how to access student's information online by using the application. Participants were given 5 minutes to prepare their performing roles.

Two rounds of role-play performing were conducted consecutively separated to two teams which combined of both students and university services equally; each round lasted for 10-15 minutes. After the performing all participants were asked to form the circle and shared their feelings and what they learned from this activity about each other roles (students versus service providers).

4.3.4.3 New Service Ideation (Activity C)

Objective: Activity C aimed to use the "Co-creation" process to help capture new knowledge and helped students and university service providers generated new ideas for new student services. It aimed to help the university service providers created new value propositions for student services. This activity also aimed to demonstrate that by using "co-creation process" university service providers and students can collaboratively co-created new student services ideas.

The researcher first asked all participants to help each other to build new students services pretotypes that related to the records office by using Lego serious play set. The brainstorming phase was added to the beginning of this activity. The participants can use flipchart and color pens for their brainstorming. Activity C lasted for 1 hour.

Figure 25: Action Research Cycle 2: Example of Activity C-Co-creation,

Brainstorming Phase
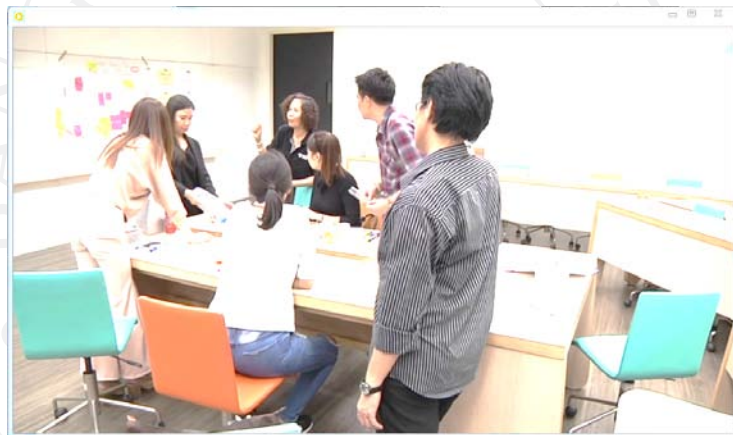
Figure 26: Action Research Cycle 2: Example of Activity C-Co-creation,

Brainstorming Phase-sharing their Ideas

Figure 27: Action Research Cycle 2: Example of Activity C-Co-creation, New

Student Service Pretotypes Building

Figure 28: Action Research Cycle 2: Example of Activity C-Co-creation,

Brainstorming Phase (Pretotypes)

4.3.5 Observe (Cycle 2)

From activity A, students provided 23 positive feedbacks and 31 negative

feedbacks which was more positive and negative feedbacks and comments than in

action research cycle 1. The researcher observed that before we started to run the activity, some students looked excited about the activity. Students were actively contributing their positive and negative feedbacks. Some students who did not have any experience at that student service department, tried to provide their suggestions or what they expected to see in the future. Students freely contributed their feedbacks and sincerely shared their experiences to each other at the activity. The 10 extra minutes added deepened the experience sharing, so it was useful.

From activity B, the researcher observed that students and university service providers paid a close attention to watch the summary of student journey map video. Then when all participants switched their roles to do a performing, it was informative and looked like a real situation. Students enjoyed and were happy while performing like the university service providers; even some students did not know how to perform and had no experience about university student services from that department before. Students had the feelings that the role they were performing, was not easy, they needed to have a service mindset and needed to be more patient while providing the students' services. Students had now a better understanding of university service providers' role. On the other hand, university service providers had better understanding of students' problems, and understood the students' expectations, the students' experiences and feelings. After the performing students and service providers had developed empathy feelings and said that they had better understanding of each other. No one blamed each other.

The researcher learned that if the researcher clearly explained about their roles, it helped them to do the best performing and built the empathy among them.

From activity C, the researcher observed that students and university service providers separately did brainstorming about new student services idea at the beginning of the activity by using flipchart board and maker pens to draft their new student service ideas. But, they shared their ideas to each other before they started to co-create a new students service pretotypes by using the Lego set. Students were eagerly and curious while they were playing with Lego set. On the other hand, university service providers became more comfortable after the activity started 5-10 minutes. They started to put a piece of Lego set to co-create the pretotypes with students. In this activity students eagerly and actively co-created with Lego set and were more engaged than university service providers. University service providers did not look fully co-created and comfortable while building the prototyping with students.
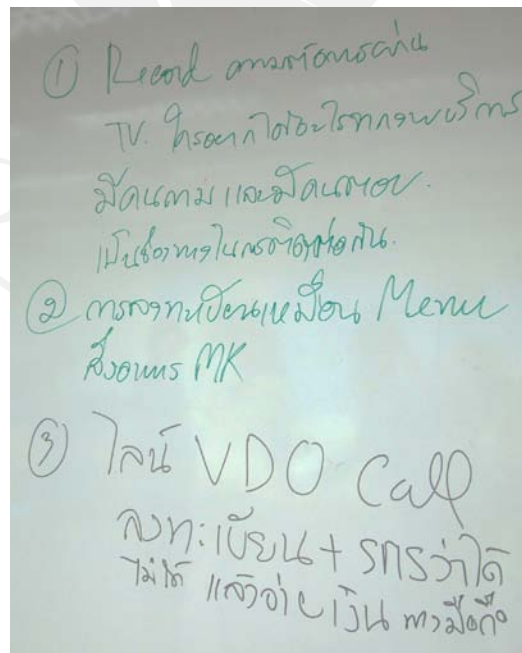
Figure 29: Action Research Cycle 2: Example of their Ideas of New Student Services

from Brainstorming Phase (from Picture 1)

In activity C, university service providers and students generated new service ideas that related to the records office. New student service ideas from brainstorming session were translated and showed as below;

1) Students would like to request by TV recording and send it through TV channel to service providers like real time communication.

2) The registration process could look like The MK restaurant set menu, so students can register like they were ordering food.

3) Registration online could be like the VDO call or through Line application, so students will receive the confirmation message like SMS for their registration online students do the online payment.
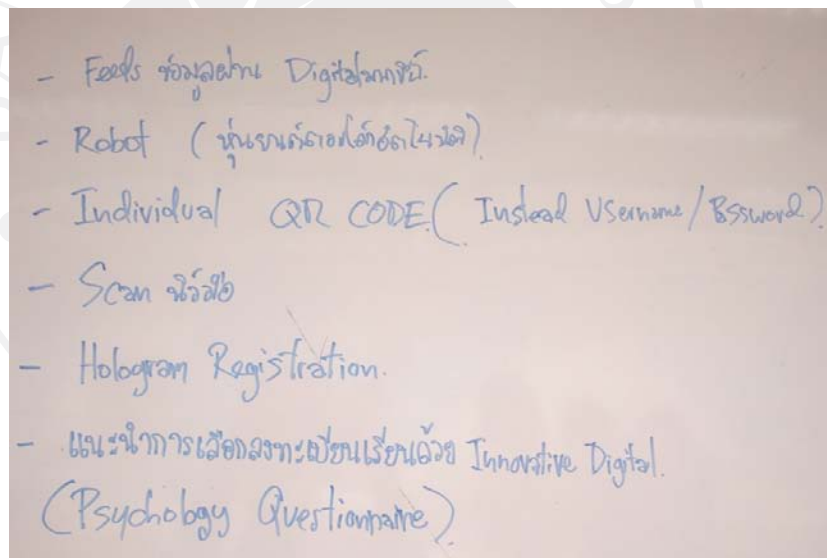
Figure 30: Action Research Cycle 2: Example of their Ideas of New Student Services from Brainstorming Phase (from Picture 2)

The contents from brainstorming session from figure 14 were translated and showed as below;

1) University service providers should upload student information through digital media.

2) The university should provide the robot to interact or answer questions with students.

3) The university should provide the individual QR code for user and password to each student.

4) The university should provide the fingerprint scanner system.

5) The university should provide the hologram registration system.

6) The university should provide the innovative digital for the guide line of the registration process.

4.4 Action Research Cycle 3

4.4.1 Participants:

For this third cycle, six Thai graduate students, who were at least on their second semester of study in a Thai Private University, joined the workshop.

Table 16: Students' Demographic of Action Research Cycle 3

	Gender (Male/ female)	Major of study
Student A	Male	MBA
Student B	Male	MBA
Student C	Male	MBA
Student D	Male	MBA
Student E	Female	MBA
Student F	Female	MBA

Three Thai service providers from the "Graduate school" of the same Thai Private University also joined this workshop.

Table 17: University Service Providers' Demographic of Action Reseach Cycle 2

	Gender (Male/ female)	Position
Service Provider A	Female	Graduate Services Officer
Service Provider B	Female	Graduate Standards Officer
Service Provider C	Female	Graduate Services Officer

The researcher as well as a video camera man also attended the workshop. Before starting each workshop the researcher explained the purpose of it and then later on facilitated the process of the workshop. This activity lasted in average 3 hours.

4.4.2 Reflect (Cycle 3)

From activity A, the researcher learned that it was better to select a student service that all students already experienced, in order to better receive many feedbacks from every student and it helped to better understand what students expected from the service department. Then in this activity, the researcher asked all students to focus only on student services that they already had experience with, but with more attention to the student services related to the Graduate school. Students were given 10 more minutes like in action research cycle 2

From activity B, the researcher observed that the empathy role-play went well and all participants had strong empathy feelings after that activity, then the researcher used the same technique as in action research cycle 2.

From activity C, the researcher learned that there might have another factor that caused university service providers to feel uncomfortable while co-creating new student service pretotypes with the Lego serious play set. Consequently, for the next

action research cycle the researchers decided to use a larger and round table to give more space for all participants to co-create and students and service providers were asked to seat not in subgroups but on alternate seats, to facilitate the overall integration.

4.4.3 Plan (Cycle 3)

The researcher used the same activities and measurements as in action research cycle 2 which was composed of three activities.

Three activities in Action Research Cycle 3:
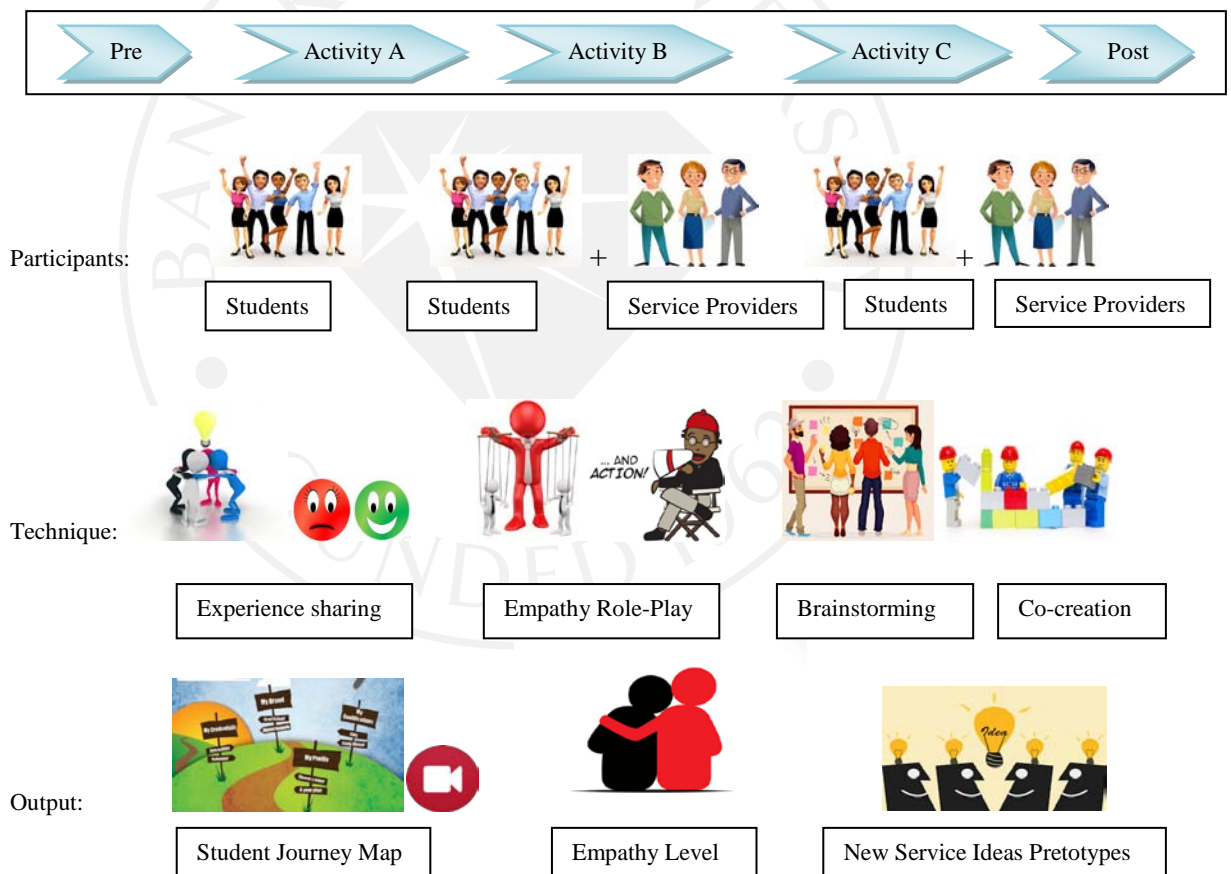
Figure 31: An Overview of Action Research Cycle 3

In this action research cycle 3, the researchers using the same data collection techniques and measurements as in cycle 2.

Each activity was described in details in chapter 3.4.

4.4.4 Act (Cycle 3)

4.4.4.1 Student Journey Map (Activity A)

Objective: Activity A aimed to better understand the overall student's satisfaction level regarding university services provided to them. It aimed to better understand student's pain points (negative feedback) while students were experiencing various university services. Another objective was to encourage students to provide feedbacks and to openly shared their experiences with each other, in order to open their mind and listened to each other. Students were given 10 more minutes like in action research cycle 2, in order to encourage students to share their experiences as much as they can.

4.4.4.2 Empathy Role-Play (Activity B)

Objective: Activity B aimed to create awareness of "The Empathy" between students and university service providers. It aimed to strengthen the relationship between students and university service providers. And lastly, to build the empathy in students and university service providers' mindset before they work together in the new student service ideation process (activity C) without any argument or blaming each other.

The researcher used the same techniques as in action research cycle 2. In this activity, the researcher provided two scenario of student's pain point that related to student service provided from the Graduate school. The scenario was selected by the researcher based on the list of students' pain points from activity A (Student Journey Map) for example, Scenario 1; students did not receive enough information from graduate school. Scenario 2; the orientation day could be improved to provide more

detailed information and tips to new graduate students. Participants were given 5

minutes to prepare their performing roles.

4.4.4.3 New Service Ideation (Activity C)

Objective: Activity C aimed to use the "Co-creation" process to help

capture new knowledge and helped students and university service providers generate

new ideas for new student services. It aimed to help the university service providers

created new value propositions for student services. This activity also aimed to

demonstrate that by using "co-creation process" university service providers and

students can collaboratively co-created new student services ideas.

The researcher used the same techniques and measurement as in action

research cycle 2, but the researcher re-arrange a long table for co-creating new student

service pretotypes with Lego set. This activity lasted for 1 hour.

Figure 32: Action Research Cycle 3: Example of Activity C-Co-creation, New

Student Service Pretotypes Building
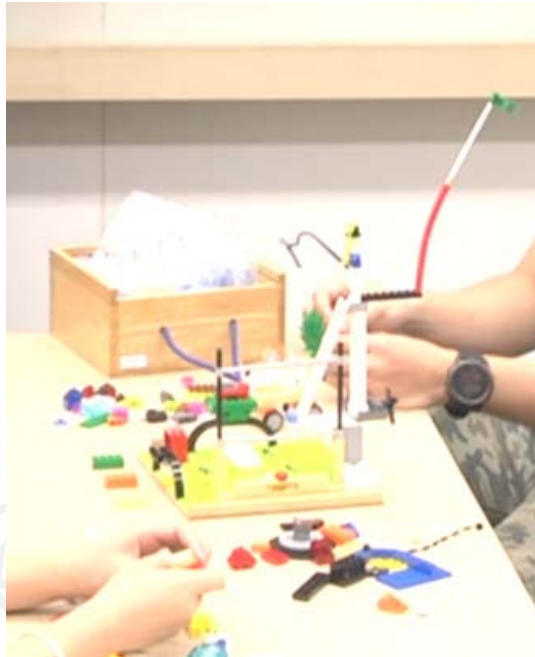
Figure 33: Action Research Cycle 3: Example of Activity C-Co-creation,

Brainstorming Phase (Pretotypes)

In activity C, university service providers and students generated new service ideas that related to Graduate School services. New student service ideas from brainstorming session were captured and showed as below;

1) Students would like Graduate school to organize the orientation day that look more interesting like the festival or concert.

2) Students would like to have a big stage and interesting opening session for guest speaker and instructor who will explain and provide information about their program, in order to attract an attention from students.

3) Students suggested to rename or change the concept of orientation day to be like the "Festival for new students" in order to make a good perception and get more students to attend.

4) Students would like Graduate school to have a big tunnel of visible and interactive information at the entrance of the orientation event.

5) Students would like Graduate school to provide many and variety of the activities which is related to useful information of the program and students expected to see extremely activities and game for team building and making new friend among them.

6) Students would like Graduate school to create group activity for each major, in order to know and make new friend with their classmates.

4.4.5 Observe (Cycle 3)

From activity A, the researcher observed that students provided 26 positive feedbacks and 26 negative feedbacks by focusing on six student services. Students were struggling to provide their feedbacks, especially negative feedback at the beginning of the activity. But, after they saw that other students openly and actively provided their feedbacks, then all students started to provide and shared their experiences with each other. Students focused on their own experiences, both satisfied and not. They eagerly provided their feedbacks without any fear all along the activity. Students felt happy that their feedbacks were concerned and were given the opportunity to provide feedbacks. They also openly provided reasons to support their feedbacks. Every student looked happy and energized.

The researcher learned that it was better to explain and showed that the activity was organized because the university was concerned and aware that the student is a key customer and that we cared about the student experience. It helped increasing student's feedback flow and the willingness of sharing, in order to better understand the insight experiences and comments from students.

From activity B, the researcher observed that students and university service providers were excited while the researcher was explaining about the role-play

activity. They discussed and shared their experience and planed how to handle with unknown situations. They were actively and playful with the role-play activity, they tried to express and handle the questions or the requests from their partners while performing. After the performing, students shared their feelings of what they learned from this activity as they were wearing the other people's shoes. They had a better understanding of university service providers than before, and sometime it reflected to students as they were too high expectation and demanding. University service providers understood how students were not fully satisfied when they came to see university service providers and needed some help from them. Everyone built their empathy feelings after they played the role-play activity. Nobody blamed each other about unsatisfied student services in this activity.

The researcher learned that it was better to remind about their performing roles, in order to let them forget about their roles in real life and moved to wear the other people's shoes and perform it as real situation. It helped students and university service providers to feel free and more comfortable to play the switched role, in order to better build the empathy among them.

From activity C, the researcher observed that students and university service providers separately did brainstorming about new student services idea at the beginning of the activity. But, they shared their ideas to each other before they started to co-create a new students service pretotypes by using the Lego set. Every student was actively and playful by using Lego set to co-create the student service pretotypes. Students did not have any problem of how to play and assembly the Lego set. On the other hand, university service providers became more comfortable after the activity started 5-10 minutes. They started to put a piece of Lego set to co-create the

pretotypes with students. In this activity students eagerly and actively co-created with Lego set and were more engaged than university service providers.

The participants used flipchart and maker pens to draft their new ideas about new student services that can be created or developed for graduate school. They were separated between students and university service providers at the beginning of brainstorming phase and they shared their new ideas to each other later on before they using Lego serious play set to build the pretotypes.

For this study the researcher stopped the action research approach after the third circle since the research objectives were met and the process used demonstrated to work adequately. Results showed that using the co-creation approach can help to support service innovation in the university context, it helped to improve the new student service development process and in the other hand, it supported the organizational learning process.

Davison et al (2004:73) suggested that at some point the researcher will has to bring the core action research cycle to an end and exit the cyclical process. He also mentioned that sometimes it is possible to complete a solution satisfaction in a single cycle, but often additional cycling through the stage is appropriate (Figure 17)
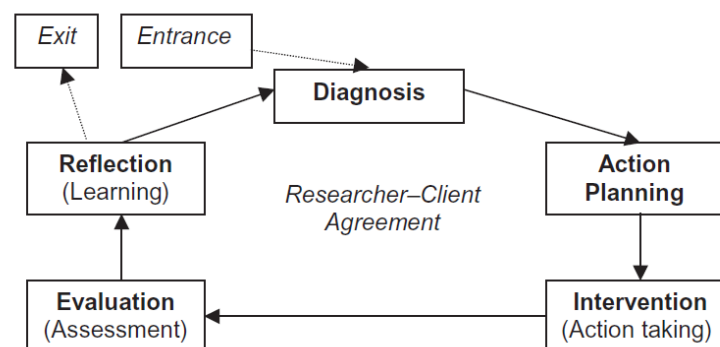
Figure 34: Canonical Action Research Process Model

Source: Susmans, G., Evered, R. (1978). An Assessment of the Scientific Merits of

Action Research. *Administrative ScienceQuarterly, 23*(4) , 582-603.

Practically there were some factors that need to be considered to end the

action research cycles. As the researcher tried to study by keeping the movement of

action research in many cycles, in order to find the satisfied solution or improvement

of the main problem or objective.

4.5 Data Analysis

The 16 voluntary participants were Thai Graduate students who were at least

on their second semester of study in a Thai Private University and 7 university service

providers who worked in 3 different student service related business units (Library

center, Record office, Graduate school). The researchers used an action research

methodology that led to three cycles of analysis. Tools and techniques used were

based on the co-creation concept. Measurement related to empathy building,

perceived students' involvement satisfaction level, and overall workshop satisfaction

were collected with a survey instrument. The interactions between participants were

analyzed by video recording after each action research cycle.

Through the 3 activities conducted during each action research cycle, the

objectives were first for students to openly share, via a journey map, their experiences

service pain points and lack of satisfaction. After having collaboratively created this

journey map, students recorded a short video to summarize these pain points. A video

was used since it was less intimidating to present pain points in a video than directly

in front of the service providers. During the second activity, service providers

watched the video to better understand the students' issues and a follow up scenario

activity was used for them to act as students and for students to act as them (service

providers), so they can better understand each others' point of view and can start building empathy between them. Once empathy was built, students and service providers could start to collaboratively find a service solution to one of the pain points previously presented. The co-created ideas were materialized/pretotyped by using a Lego set.

The first round of action research, worked as planned. A source of improvement was identified regarding activity A and C. The student experience sharing was not fully happened, because of limited of time. Then, the researchers decided to give an extra 10 more minutes for the 2nd cycle of action research. The co-creation process between the students and university service providers was not so well coordinated and the solution proposed was not a real integrated co-created solution. Consequently, the researchers decided to add an extra step to activity C for the 2nd cycle of action research. Before starting the co-creation process directly with the Lego set, the students and university service providers spent 10 minutes brainstorming on various ideas/solutions. Each participant was given some post-it to write down there ideas individually, and then each of them presented them to the group. Once all ideas were presented, they were grouped on the wall by ideas' themes and the pretotyping activity could start. This change demonstrated to work well for the second cycle of the action research.

From the 1st and 2nd cycles the researchers noticed that the students and service providers seem to co-create part of the solution in separate sub groups. The researcher realized that the rectangle table in which the Lego set were seating on was probably too small and that the service providers were seating close to each others and students were also seating close to each others. Consequently, for the 3rd cycle the

researchers decided to use a larger and round table to give more space for all participants to co-create and students and service providers were asked to seat not in subgroups but on alternate seats, to facilitate the overall integration. At the end of the 3rd cycle, the researchers were happy and satisfied with the results since every activity seemed to achieve its planned objectives, so the researchers decided to end the action research process after the 3rd cycle.

Due to time constraint, the overall co-creation workshops lasted 3 hours. The last service co-creation phase lasted only 30 minutes, consequently the idea that emerged from this service co-creation activity were not as revolutionary as we would have liked to see them, but some new ideas came out that will still be worth exploring further.

Questionnaires were used to measure the level of empathy after the activity B (role play) and another questionnaire was used at the end of the co-creation workshop to measure the perceived students' involvement satisfaction level, the perceived empathy for each others, and the overall satisfaction with the service co-creation workshop. All observation information and the findings were analyzed after the workshop at the end of the day. The questionnaire had a scale from 1 to 6, from low satisfaction level to high satisfaction level, no middle scale in order to avoid the partial to select the middle value, because the participant might not want to take a side.

The researchers only focused on the main summarized findings.

| Pre | Activity A | Activity B | Activity C | Post |

Data Collection:

| Observation | Survey | VDO Recording | Notes taking |

Variable Measurement:

Student:	Student:	Student:	Student:	Student:
-Overall service satisfaction level Survey	-Emotional expression and engagement survey	-Emotional expression and engagement survey	-Emotional expression and engagement survey	-Perceived effectiveness of co-creation process
		-The empathy level survey	-Ideation effectiveness	-Perception toward service provider
Service Provider:				-The empathy level generated by co-creation workshop
-Perceived satisfaction level related to service provide to student survey		Service Provider:	Service provider:	-Overall satisfaction
		-Emotional expression and engagement survey	-Emotional expression and engagement survey	-Feedback
		-The empathy level survey	-Ideation effectiveness	Service Provider:
				-Perceived effectiveness of co-creation process
				-Perception toward service provider
				-The empathy level generated by co-creation workshop
				-Overall satisfaction
				-Feedback

Figure 35 An Overview of Action Research Cycle 3 (Data Analysis)

4.5.1 The Analysis of the Gap of Satisfaction Level between University Service Providers and Students

4.5.1.1 University Service Providers versus Students

Before the beginning of the workshop students and university service providers filled this satisfaction survey.
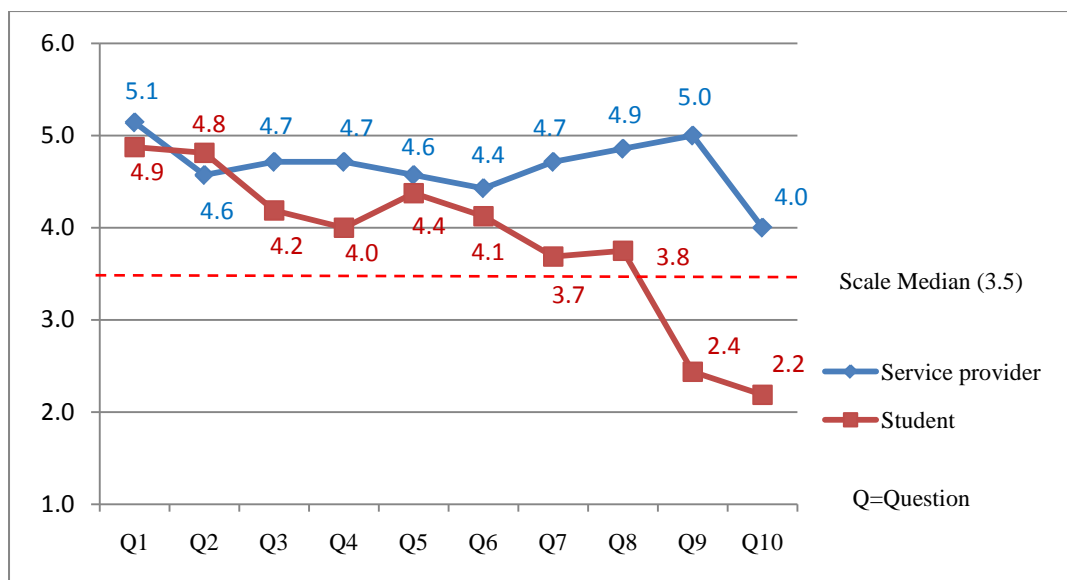
Figure 36: The Satisfaction Level between University Service Providers and Students

Table 18: The University Service Providers' Satisfaction Level

Questions	Average score
1. To which extent, do you think that student services provided by the university are important to the student's life?	5.1
2. To which extent, do you think that student services provided by the university make student more satisfied?	4.6
3. To which extent, do you think that student services provided by the university meet the student's needs?	4.7
4. To which extent, are you satisfied with the overall student services that you provide to students?	4.7
5. To which extent, are you satisfied with your interactions with students?	4.6
6. To which extent, are you satisfied with the student service quality that you provide to students?	4.4
7. To which extent, are you satisfied with the student service novelty that you provide to students?	4.7

(Continued)

Table 18 (Continued): The University Service Providers' Satisfaction Level

Questions	Average score
8. To which extent, are you satisfied with the student service variety that you provide to students?	4.9
9. How often does your unit give the opportunity to students to provide their feedback about student services?	5.0
10. How often does your unit allow students to be involved or to participate in any new student service development process?	4.0

The result showed that the average score of the university service providers'

satisfaction level (from Q1-Q10) were at 5.1, 4.6, 4.7, 4.7, 4.6, 4.4, 4.7, 4.9, 5.0 and

4.0 in order. All scores were above the median level (score 3.5). It meaned that

university service providers perceived that student services provided from the

university were satisfied and useful to students and it met the student's needs. They

were also satisfied with the students' interaction, quality, novelty and variety of

student services. They perceived that their business unit gave the opportunity and

allowed students to provide their feedbacks and involved in new students service

development process at the high level as showed from the result at 5.0 and 4.0 in

order.

Table 19: The Students' Satisfaction Level

Questions	Average score
1. To which extent, are university services important to you?	4.9
2. To which extent, are university services useful to you?	4.8
3. To which extent, do university services meet your needs?	4.2
4. To which extent, are you overall satisfied with university services?	4.0
5. To which extent, are you satisfied with your interactions with university service providers?	4.4
6. To which extent, are you satisfied with the university service's quality that is provides by the university?	4.1
7. To which extent, are you satisfied with the university service's novelty that is provides by the university?	3.7
8. To which extent, are you satisfied with the university service's variety that is provides by the university?	3.8
9. How often were you given the opportunity to provide feedback regarding university services?	2.4
10. How often have you been involved or participated in any new university service development process?	2.2

On the other hand, the average score of student satisfaction level showed at score 4.9, 4.8, 4.2, 4.0, 4.4, 4.1, 3.7, 3.8, 2.4 and 2.2 in order. Almost of the score were above, but there were two scores for Q9 and Q10 which showed at score 2.4 and 2.2 in order were lower than the median level (3.5). It meaned that almost of students concerned that student services provided from the university were important, useful and met their needs. And, they were also satisfied with the quality, novelty and variety of student services. But, students perceived that they did not receive the

opportunity to provide their feedbacks and involved into new student service

development process properly (Q9 and Q10).

Table 20: The Satisfaction Gap between University Service Providers and Students

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Service provider	5.1	4.6	4.7	4.7	4.6	4.4	4.7	4.9	5.0	4.0
Student	4.9	4.8	4.2	4.0	4.4	4.1	3.7	3.8	2.4	2.2
Difference (SP-Student)	0.3	-0.2	0.5	0.7	0.2	0.3	1.0	1.1	2.6	1.8
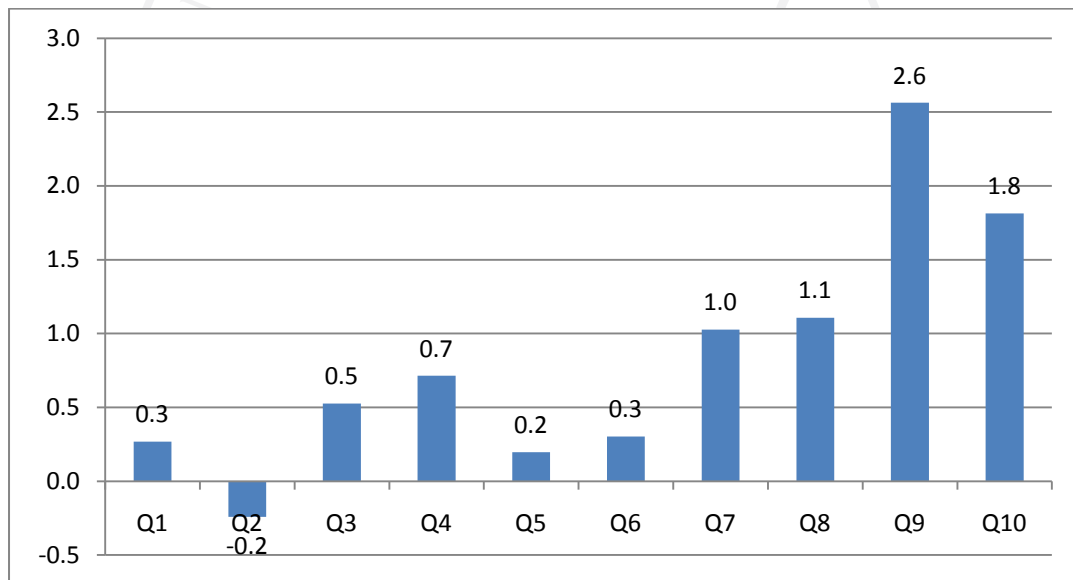
Figure 37: The Satisfaction Gap between University Service Providers and Students

From the table 14, the researcher presented the satisfaction gap, the gap can be

categorized in 3 level as the gap lower or equal at 0.5 ($\leq$0.5), the gap higher than 0.5

to equal 1.0 (>5-1.0) and the gap higher than 1.0 (>1.0).

For Q1, Q3, Q5 and Q6 showed the gap level lower or equal at 0.5, it meaned

that the perception and satisfaction of both university service providers and students

were at the same level. For Q4 and Q7 showed a gap level between 0.5 and 1.0, it meaned that the satisfaction level of the overall student services and the student service novelty was important between university service providers and students, so these results need to be considered by the university's owner or stakeholder in order to improve student service later on. And lastly, for Q8, Q9 and Q10 showed a gap level higher than 1.0, it meaned that university service providers perceived that the variety of student services and the opportunity that their business unit gave to students to provide feedback and involvement to new student service development process higher than students' perception. These gaps need to be considered seriously in order to have a very quick improvement before it caused a problem or turn to a bad reputation for the university. It might also cause a lower student retention rate in the future.

Perceived students' involvement satisfaction level, after Activity C, another set of questions was used to measure if the participants perceived that if students were involved in the service development process it could help improving such services quality and satisfaction. Two questions were asked to both students and university service providers.

1. To which extent, do you think that if you/students were involved in the student service development process, it could help to create better student services?

2. To which extent, do you think that if you/ students were involved in the student service development process, it could make you/students more satisfied?

The average score for these 2 questions was 5.3/6 for service providers and 5.2/6 for students. Once again these high scores demonstrated that the co-creation

process had a positive impact on the participants and that they can see the value of such approach.

    4.5.2 The Analysis of Co-creation Workshop Satisfaction Level

        4.5.2.1 University Service Providers
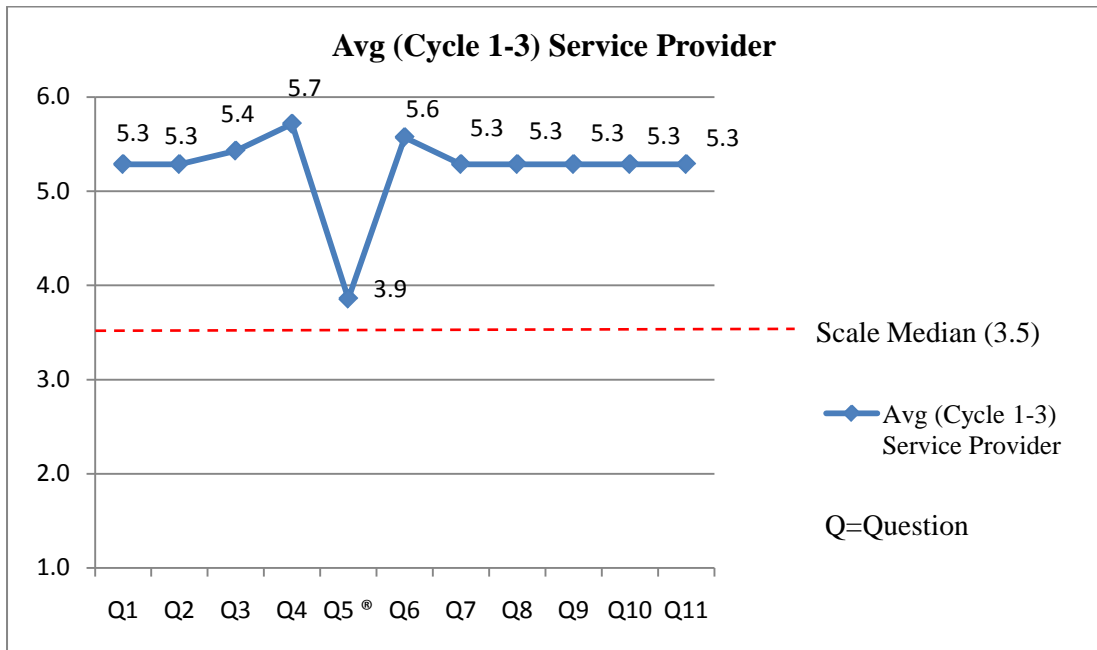
Figure 38: The University Service Providers' Co-creation Workshop Satisfaction
        Level

Table 21: The University Service Providers' Co-creation Workshop Satisfaction
        Level

Questions	Average score
1. To which extent, do you think that if students were involved in the student service development process, it could help to create better student services?	5.3
2. To which extent, do you think that if students were involved in the student service development process, it could make them more satisfied?	5.3

<div align="right">(Continued)</div>

Table 21 (Continued): The University Service Providers' Co-creation Workshop

Satisfaction Level

Questions	Average score
3. To which extent, does your unit care about students' needs when developing new services?	5.4
4. To which extent, does your unit pay attention to students' needs?	5.7
5. To which extent, does your unit ignore students' needs?	3.9
6. To which extent, did this workshop helped you better understand student's needs?	5.6
7. To which extent, did this workshop helped you better understand student's pain points?	5.3
8. To which extent, did this workshop helped you increase your empathy toward students?	5.3
9. To which extent, did this workshop helped you get closer to students?	5.3
10. How are you overall satisfied with this workshop?	5.3
11. Would you consider using this co-creation approach with students to develop new services in your unit in the future?	5.3

The result showed that the average score of the university service providers'

satisfaction level (from Q1-Q11) were at 5.3, 5.3, 5.4, 5.7, 3.9, 5.6, 5.3, 5.3, 5.3, 5.3,

and 5.3 in order. All scores were above the median level (3.5). It meaned that

university service providers perceived and expected that if students were involved in

the student service development process, it could help to create better student services

and it could make students more satisfied. And, it showed that they perceived that

their business unit care about students' needs and paid attention to students at high

level. The results also showed that university service providers were satisfied with the overall co-creation workshop and they perceived that this workshop helped them better understand students' needs, student's pain points. It helped them increased their empathy toward students. University service providers agreed to use this co-creation approach in order to help them to develop new student services in their business unit in the future. It was a good sign of the employee engagement and their willingness to involve students in the service development process in order to improve the university student services and drive the service innovation in the university context in the future.

Table 22: The University Service Providers' Open-ended Questions Details

Questions
12.   Please explain the reason why or why not? Would you consider using this co-creation approach with students to develop new services in your unit in the future?
13.   What difficulties or barriers do you think may prevent your unit from using co-creation approach? Please explain?
14.   Did you find the output of the co-creation activity (Activity C by using LEGO) to be……?
15.   What did you like about this workshop?
16.   What you did not like about this workshop?
17.   Please suggest what could be done differently or improved in this workshop?

Q12 to Q17, were the open-ended questions, they showed that university service providers considered using this co-creation approach to help them develop new student services in their business unit in the future because they concerned that their business units were student- oriented and the co-creation approach was a very

useful and will help to support the new students service improvement process in the future. Because this approach helped them to better understand the student's feelings, student's needs, and helped to receive the feedback from students in order to better know students' insight. They thought that the output of co-creation approach was inspiring, innovative and very useful to their business units and the university. But, on the other hand university service providers were aware of the limited resources, for example human resources, budget, time will be the barrier of co-creation approach implementation, but some service providers thought that these were not too big issue compared to the resistance of change, since this approach might affect the way employee are working.

Almost all university service providers liked the Role-play activity (Activity B) because it helped them better understand student's feelings and student's needs. They liked Lego serious play activity (Activity C) because it helped them gaining ideas and learning by doing by developing the pretotypes together. However, some university service providers disliked the Lego serious play (Activity C) because they did not feel comfortable with this Lego set and thought that it was difficult to play, so the researcher need to consider about this feedback and might consider using other co-creation technique for the ideation process in future research.

4.5.2.2 Student
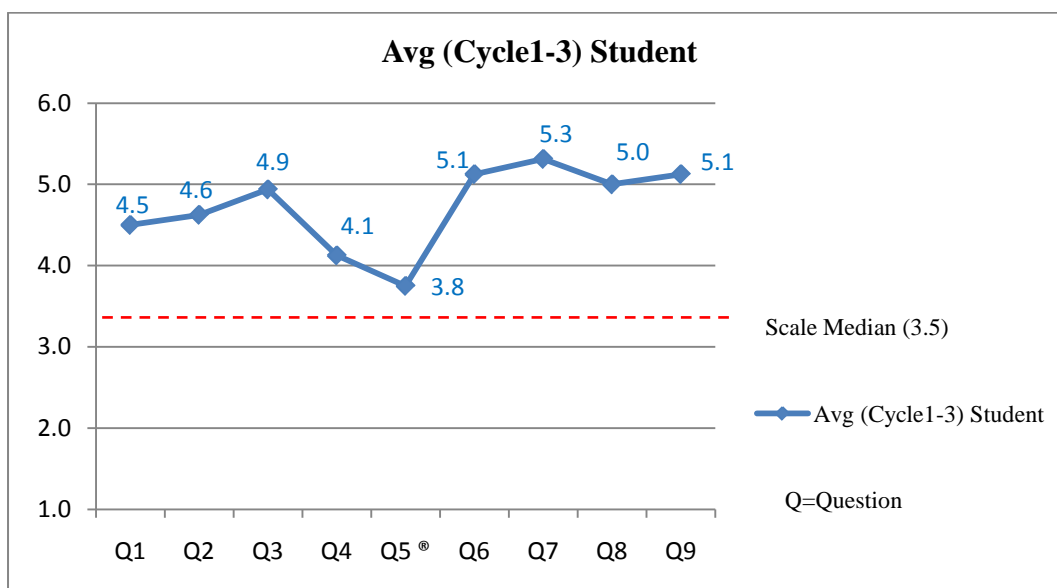
Figure 39: The Students' Co-creation Workshop Satisfaction Level

Table 23: The Students' Co-creation Workshop Satisfaction Level

Questions	Average score
1. To which extent, do you think that if you were involved in the university service development process like today, it could help to create better university services?	4.5
2. To which extent, do you think that if you were involved in the university service development process like today, it could make you more satisfied?	4.6
3. To which extent, do you think that university service providers care about students' needs when developing new services?	4.9
4. To which extent, do you think that university service providers pay attention to students' needs?	4.1
5. To which extent, do you think that university service providers ignore students' needs?	3.8

(Continued)

Table 23 (Continued): The Students' Co-creation Workshop Satisfaction Level

Questions	Average score
6. To which extent, did this workshop helped you better understand university service providers constraints?	5.1
7. To which extent, did this workshop helped you increase your empathy toward university service providers?	5.3
8. To which extent, did this workshop helped you get closer to university service providers?	5.0
9. How are you overall satisfied with this workshop?	5.1

The results showed that the average score of the students' satisfaction level were Q1=4.5, Q2=4.6, Q3= 4.9, Q4= 4.1, Q5= 3.8, Q6= 5.1, Q7= 5.3, Q8= 5.0 and Q9= 5.1 in order. All scores were above the median scale (score 3.5). It meaned that students perceived and expected that if they were involved in the student service development process, it could help to create better student services and it could make them more satisfied. It showed that they perceived that university service providers care about their needs and paid attention to them at high level. The results also showed that students were satisfied with the overall co-creation workshop and they perceived that this workshop helped them better understand university service providers' constraint; it helped them to get closer to university service providers. Students were satisfied and perceived that this co-creation approach helped them increased their empathy toward university service providers.

Table 24: The Students' Open-ended Questions Details

Questions
10.   What did you like about this workshop?
11.   What you did not like about this workshop?
12.   Please suggest what could be done differently or improved in this workshop?

Q10 to Q12, were the open-ended questions; they showed that almost all students liked all activities. For example they liked the activity A, because it gave them the opportunity to share their experiences and ideas with the other and listened to them at the same time. For activity B, students liked it because they thought that it helped them to better understand the university service providers and they liked the activity C, because they fully enjoyed generating ideas and playing with Lego set which helped them to have a clear picture of what they were trying to express to the other. Every student had no problem to play with the Lego set. So, this activity seemed helpful to new student service ideation process for students.

Overall satisfaction with the service co-creation workshop showed the average score for this question was 5.4/6 for service providers and 5.5/6 for students. Once again these high scores demonstrated that participants of the co-creation service idea process were satisfied with the new approach used and that they could see the value of using such approach. Open ended questions were also used to ask the service providers if they will, from now on, consider using such approach to develop new services and all of them were very positive and enthusiastic about the idea of doing so.

4.5.3 The Analysis of the Empathy Quotient Level

4.5.3.1 University Service Providers versus Students
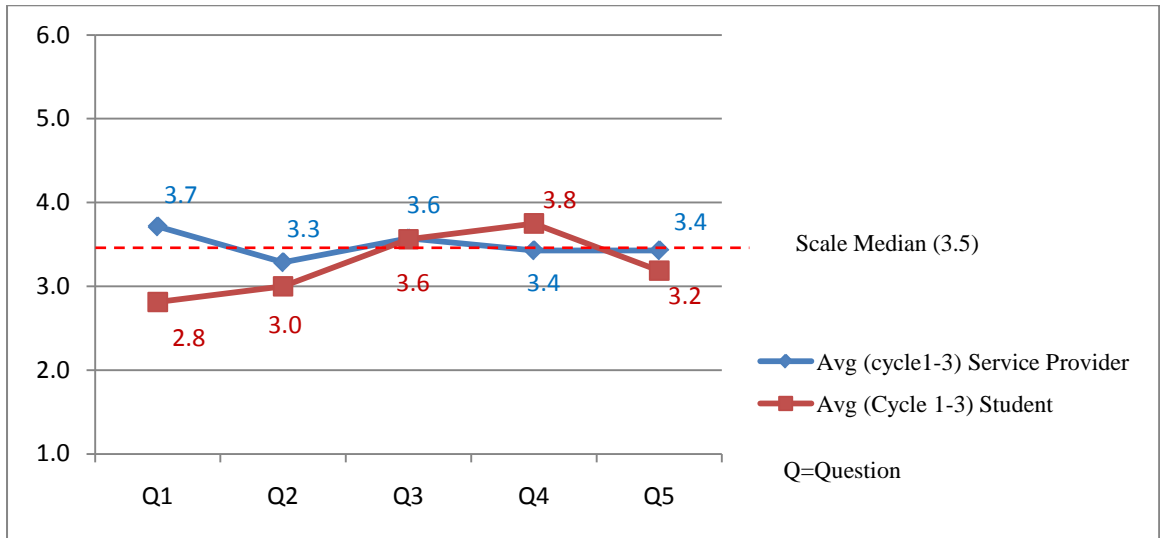
Figure 40: The Comparison of the Average Empathy Level between University

Service Providers and Students

Table 25: The Comparison of the Average Empathy Level between University

Service Providers and Students

	Q1: When I talk to university service providers/ students, I tend to talk about their experiences rather than my own.	Q2: I can usually appreciate the university service providers/ students' viewpoint, even if I don't agree with it.	Q3: I try to understand university service providers/ students better by imagining how things look from their perspective.	Q4: I believe that there are two sides to every problem and I try to look at them both.	Q5: When I am upset at university service providers/ students, I usually try to "put myself in their shoes" for a while.
Service provider (Avg.)	3.7	3.3	3.6	3.4	3.4
Student (Avg.)	2.8	3.0	3.6	3.8	3.2

The results showed that the average score of the university service providers' the empathy level were Q1=3.7, Q2= 3.3, Q3=3.6, Q4=3.4 and Q5=3.4 in order. For Q1and Q3 the average score were above the median level (score 3.5), it showed that university service providers developed some empathy feelings and open mindset toward students in the aspect that they tended to talk about students' experiences rather than themselves while they were talking to students. University service provider tried to understand students better by imagining how things look from their perspective. As for Q2, Q4 and Q5 the average score were lower the median level (3.5), it showed that the empathy level happed at low level in the aspect that university service providers were usually appreciated the students' viewpoint, even if they did not agree with it. University service providers believed that there were two sides to every problem and tried to look at them both, and it showed that when university service providers were upset at students, they usually tried to put themselves in students' shoes for a while at low level.

The results from students showed the average score of students' the empathy levels were Q1=2.8, Q2=3.0, Q3=3.6, Q4=3.8 and Q5=3.2 in order. For Q1, Q2 and Q5 the average score lower than the median level (3.5); it means that students perceived that when they talked to university service providers, university service providers tended to talk about themselves rather than students. University service providers did not appreciate the students' viewpoint when they did not agree with it. Then, students did not try to "put themselves in university service providers' shoes" when students were upset at university service providers. The results showed that the empathy level of students happened at a lower level.

Table 26: The Empathy Gap Level difference between University service Providers

and Students

	Q1: When I talk to university service providers/ students, I tend to talk about their experiences rather than my own.	Q2: I can usually appreciate the university service providers/ students' viewpoint, even if I don't agree with it.	Q3: I try to understand university service providers/ students better by imagining how things look from their perspective.	Q4: I believe that there are two sides to every problem and I try to look at them both.	Q5: When I am upset at university service providers/ students, I usually try to "put myself in their shoes" for a while.
Service provider (Avg.)	3.7	3.3	3.6	3.4	3.4
Student (Avg.)	2.8	3.0	3.6	3.8	3.2
Difference(SP-Student)	**0.9**	**0.3**	**0.0**	**-0.3**	**0.2**
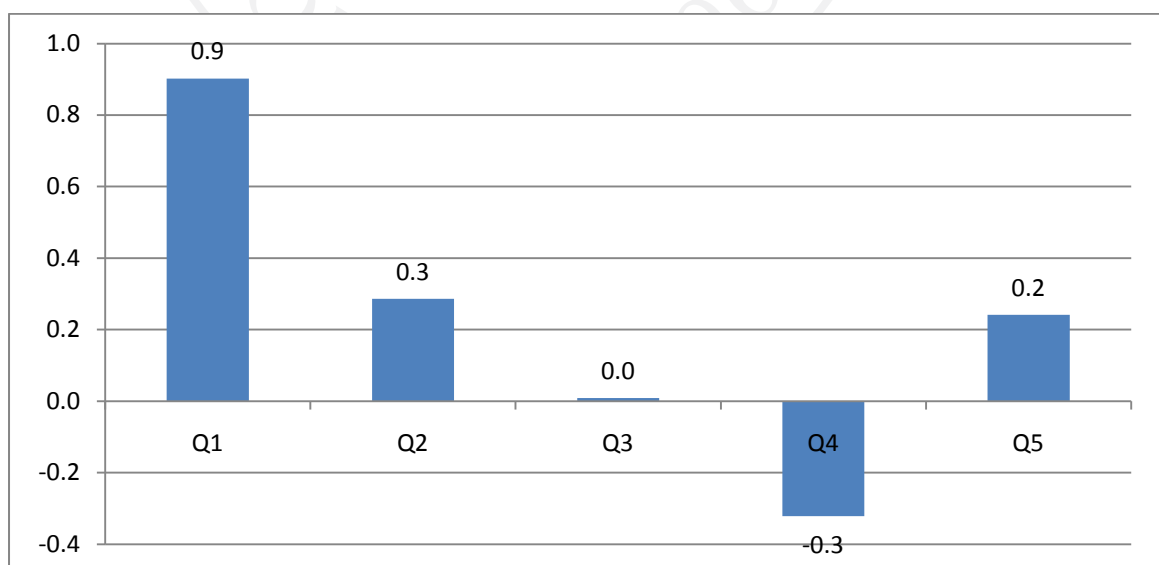
Figure 41: The Empathy Gap Level between University Service Providers and

        Students

        We can observe that in general university service providers developed more empathy feelings than students.

        From the table 20, the researcher classified the gap in three levels as the gap lower or equal to ±0.5, the gap between ±0.5 and ±1.0 (±5-±1.0) and the gap higher than ±1.0 (±1.0).

        Q2, Q3, Q4 and Q5 showed the gap level lower than ±0.5, it meaned that the empathy level of both university service providers and students were almost at the same level. They had the same perception in those four aspects. For Q4 showed that students developed more empathy than university service providers because students believed that there are two sides to every problem and they tried to look at them both. Q1 showed a gap level between ±0.5 and ±1.0 (±5-±1.0). University service providers developed more empathy than students when they talked about the other's experiences.

        For the empathy building, it showed that both graduate students and university service providers filled the questionnaires. In order to measure the level of empathy, five questions were used (Cf. Table 21 and Table 22). The measurement scale ranged from: 1(To a very low extent) to 6 (To a very high extent) – Median value = 3.5

Table 27: Empathy Questions for University Service Providers (n=7)

Empathy Questions (Service Providers)	AVG
1. When I talk to students, I tend to talk about their experiences rather than my own.	2.8
2. I can usually appreciate the students' viewpoint, even if I don't agree with it.	3.0
3. I try to understand students better by imagining how things look from their perspective.	3.6
4. I believe that there are two sides to every problem and I try to look at them both.	3.8
5. When I am upset at students, I usually try to "put myself in their shoes" for a while.	3.2
Average Score	**3.3**

Table 28: Empathy Questions for Graduate Students (n=16)

Empathy Questions (Students)	AVG
1. When I talk to university service providers, I tend to talk about their experiences rather than my own.	2.8
2. I can usually appreciate the student service providers' viewpoint, even if I don't agree with it.	3.0
3.I try to understand student service providers better by imagining how things look from their perspective	3.6
4. I believe that there are two sides to every problem and I try to look at them both.	3.8
5. When I am upset at student service providers, I usually try to "put myself in their shoes" for a while.	3.2
Average Score	**3.5**

The average empathy scores were very similar and were around the median value of the measurement scale (3.5). Activity B helped them to build some empathy but there was still some room for improvement. After Activity C, another set of questions was used to measure if the participants perceived that the co-creation

workshop had helped them increase their empathy for each others. Two questions were asked.

1. To which extent, did this workshop helped you increase your empathy toward students/Service providers?

2. To which extent, did this workshop helped you get closer to students/Service providers?

Using the same measurement scale as before, the average score for Question #1 for service providers was 5.3/6 and for students 5.6/6.

The average score for question #2 were the same for students and service providers = 5.3/6

These high scores demonstrated that by the end of the co-creation workshop, both parties had built empathy for each others and better understood each others issues and constraints. They had reached a point were they could now collaboratively look for creative service solutions to current issues, rather than blaming each others.

4.5.4 The Analysis of the Emotional Expression and Engagement

4.5.4.1 University Service Providers

From this study, university service providers only interacted with students during activity B (Empathy Role-play) and activity C (Lego serious play). From table 19 (page 176)

4.5.4.1.1 Emotional Expression

From action research cycle 1, cycle 2 and cycle 3; by watching the video recordings, the researcher observed the feeling and manners of all university service providers by focusing on four positive emotional criteria, for example excitement, joy, happiness, and hopeful liked when the participant expected

something to be happen after this activity by saying or from their manners. Five

negative emotional criteria, for example sadness, boredom, frustration, shyness and

uncomfortable liked when the participants behaved that they had less patient to attend

or participate with the other and looked like they would like to leave the room. These

criteria were used to measure the emotional expression from all university service

providers while they were involved and interacted among them and with students all

along the activities. It showed that all university service providers were joyful, six out

of seven of university service providers looked happy and four out of seven were

excited and looked hopeful while they were participating and interacting in the

activities. But, there were six out of seven of university service providers who felt

uncomfortable and two out of seven looked too shy.

No one looked sad, got bored or looked frustrated during these activities.

4.5.4.1.2 Engagement

From action research cycle 1, cycle 2 and cycle 3; the

researcher observed the engagement of all university service providers by focusing on

four criteria on the positive engagement criteria, for example energy, eagerly,

curiosity and courage liked when the participants behaved or said that they cannot

wait to do it or make it happen during these activities. Four negative engagement

criteria, for example low-interest, ignorance, isolation and anger liked when the

participants did not pay attention to what happening and be quiet during the activity.

These criteria were used to measure the engagement from all university service

providers while they were involved and interacted among them and with students all

along the activities. It showed that all university service providers were courageous,

six out of seven were curious, four out of seven were energized and two out of seven

looked eagerly while they were participating in these activities. But, there were five out of seven isolated from the group and four out of seven looked low-interested in these activities.

No one ignored or looked angry.

4.5.4.2 Students

From this study, students interacted with each other in activity A (Student journey map) and they interacted with university service providers in activity B (Empathy Role-play) and activity C (Lego serious play). From table 20 (page 177)

4.5.4.2.1 Emotional Expression

From action research cycle 1, cycle 2 and cycle 3; by watching video recording the researcher observed the feeling and manners of all students by focusing on four positive emotional criteria, for example excited, joyful, happiness, and hopeful liked when the participant expected something to be happen after this activity by saying or from their manners. Five negative emotional criteria, for example sadness, boredom, frustration, shyness and uncomfortable liked when the participants behaved that they had less patient to attend or participate with the other and looked like they would like to leave the room. These criteria were used to measure the emotional expression from all students while they were involved and interacted among them and with university service providers all along the activities. It showed that all students were joyful and looked happy, thirteen out of sixteen of students looked hopeful and twelve out of sixteen were excited while they were participating and interacting in the activities. But, there were four out of sixteen looked too shy, but it happened just at the beginning of the activity A.

No one looked sad, got bored, looked frustrated and looked uncomfortable in these activities.

4.5.4.2.2 Engagement

From action research cycle 1, cycle 2 and cycle 3; by watching video recording the researcher observed the engagement of all students by focusing on four positive engagement criteria, for example energy, eagerly, curiosity and courage liked when the participants behaved or said that they cannot wait to do it or make it happen during this activity. Four negative engagement criteria, for example low-interest, ignorance, isolation and anger liked when the participants did not pay attention to what happening and be quiet during the study. These criteria were used to measure the engagement from all students while they were involved and interacted among them and with university service providers all along the activities. It showed that all students were courageous, fifteen out of sixteen were curious, fourteen out of sixteen looked eagerly and thirteen out of sixteen were energized while they were participating in these activities. But, two out of sixteen isolated themselves from the group during these activities.

No one looked that they had low-interested, no one ignored (or did not pay attention to the activity) or looked angry.

Table 29: University Service Providers' Emotional Expression and Engagement Level

Respondent (Service provider)	Emotional Expression								
	Excited	Joyful	Happy	Hopeful	Sadness	Boredom	Frustration	Shyness	Uncomfortable
Cycle 1 : A		x	x	x					x
B		x	x	x					x
Cycle 2 : C	x	x	x					x	x
D	x	x	x					x	x
Cycle 3 : F		x		x					x
G	x	x	x	x					x
H	x	x	x						

(Continued)

Table 29 (Continued): University Service Providers' Emotional Expression and Engagement Level

Respondent (Service provider)	Engagement							
	Energize	Eagerly	Curiosity	Courage	Low Interest	Ignorance	Isolate	Angry
Cycle 1 : A	x	x	x	x				
B		x	x	x				
Cycle 2 : C	x		x	x	x		x	
D			x	x	x		x	
Cycle 3 : F	x			x	x		x	
G	x		x	x			x	
H			x	x	x		x	

Table 30: Students' Emotional Expression and Engagement Level

Respondent (Students)	Emotional Expression							
	Energize	Eagerly	Curiosity	Courage	Low Interest	Ignorance	Isolate	Angry
Cycle 1 : A	x	x	x	x				
B	x	x	x	x				
C	x	x	x	x				
D	x	x	x					x
E		x	x					x
Cycle 2 : G	x	x	x	x				
H	x	x	x	x				
I	x	x	x	x				
J		x	x	x				
K		x	x	x				

(Continued)

Table 30 (Continued): Students' Emotional Expression and Engagement Level

Respondent (Students)	Emotional Expression							
	Energize	Eagerly	Curiosity	Courage	Low Interest	Ignorance	Isolate	Angry
Cycle 3 : L	x	x	x	x				
M	x	x	x					x
N	x	x	x	x				
O		x	x	x				x
P	x	x	x	x				
Q	x	x	x	x				

Table 30 (Continued): Students' Emotional Expression and Engagement Level

Respondent (Students)	Engagement							
	Energize	Eagerly	Curiosity	Courage	Low Interest	Ignorance	Isolate	Angry
Cycle 1 : A	x	x	x	x				
B	x	x		x				
C	x	x	x	x				
D		x	x	x				
E	x		x	x			x	
Cycle 2 : G	x	x	x	x				
H	x	x	x	x				
I	x	x	x	x				
J	x	x	x	x				
K	x	x	x	x				

Table 30 (Continued): Students' Emotional Expression and Engagement Level

Respondent (Students)	Engagement							
	Energize	Eagerly	Curiosity	Courage	Low Interest	Ignorance	Isolate	Angry
Cycle 3 : L	x	x	x	x				
M			x	x				
N	x	x	x	x				
O		x	x	x			x	
P	x	x	x	x				
Q	x	x	x	x				

CHAPTER 5

DISCUSSION AND CONCLUSION

In this last chapter, the researchers summarized the overall important aspect of this study along with discussion related to the results from the research and ideas for future related research.

The study of "Using Co-Creation process to support Service Innovation" is an action research study conducted in a Private University in Thailand. The result of this study can be used to improve new student service development process, to co-create novel student services, to create value added of student services. There were two objectives of this study:

1) To examine how service innovation could help improving the new student service development process by using "Co-creation techniques"

2) To investigate how students involvement in new student service development process could help creating added value to new student services.

The research question associated with this study is to investigate: How Co-creation could be used to support service innovation in a university context? This study does not look at the educational services provided but focuses on the supporting services provided to graduate students.

Based on our literature review, we could not find any study that investigated how service innovation could support the service business units of a university. The researchers were particularly interested in studying how university service providers and students can collaboratively use service innovation through Co-creation activities. Co-creation is an approach that can help each party to better understand each other

and generate new ideas to solve the current problems that they face and as a new way to improve and develop university student services.

5.1 Summary of Findings

This research used an action research methodology that led to three cycles of analysis. Co-creation tools and techniques were used during a 3 steps workshop. Measurement related to students' satisfaction, student service quality, the novelty and variety of students services, the empathy feeling, emotional expression of all participants and new student service idea generation were captured by survey and by observation. The interactions of participants were analyzed by watching video recordings.

The participants were 16 Thai Graduate students who were at least on their second semester of study in a Thai Private University and 7 university service providers who worked in the student service related business units (Library center, Records office, Graduate school) in the same private university. They all voluntary participated in this study.

The data collected from 23 participants can be summarized as follow:
Part 1: The analysis of demographic information of participants.

The majority of students were female age ranging between 22-30 years, educational level in master's degree (in their second semester), fulltime and part-time Thai students. The majority of university service providers were female age ranging between 35-55 years, educational level in bachelor and master's degree, work experience at least 5 years.

Part 2: The analysis of the gap of satisfaction level between students and university service providers.

Five dimensions were measured; the perception of the importance and usefulness of student services, the student service meet the student's need, the satisfaction of the quality, novelty and variety of student services, the student's opportunity to provide their feedbacks and the student involvement to new student service development process. The University service providers' perception regarding the overall satisfaction level of student services that were provided by their department were at high level (higher than median level). Students' perception regarding the importance and usefulness of student services, the satisfaction of the quality, novelty, variety of student services were at high level (higher than median level) and it met students' needs were also at high level. Students' perceptions regarding the opportunity to provide their feedbacks and the involvement to new student service development process were at low level (lower than median level). These results showed that there was always room for improvement for University service providers when it came to provide more novel services and when it came to better engaged students in this creation process.

Part 3: The analysis of Co-creation workshop satisfaction level.

The results indicated that university service providers were satisfied with the overall co-creation workshop and that they perceived that this workshop helped them better understand students' needs, student's pain points. It helped them increased their empathy toward students. University service providers will consider using this co-creation approach to help them develop new student services in their business unit in the future because they concerned that their business units were student- oriented and the co-creation approach was a very useful and will help to support the new students service improvement process in the future.

The overall students' satisfaction level was at high level (higher than median level). It indicated that students were satisfied with the co-creation workshop and they perceived that this workshop helped them better understand university service providers' constraint; it helped them to get closer to university service providers and helped them increase their empathy toward university service providers.

Part 4: The analysis of the empathy quotient level.

The analysis of the empathy quotient level can be summarized as follow; according to university service providers' empathy level were at high level (higher than median level). It indicated that university service providers developed empathy feelings and mindset in the aspect that they tended to talk about students' experiences rather than themselves while they were talking to students and university service providers tried to understand students better by imagining how things look from their perspective. But, findings showed that when university service providers were upset at students, their level of empathy toward students was at lower level.

Students' empathy level was at low level (lower than median level). It indicated that students perceived that when they talked to university service providers, university service providers tended to talk about themselves rather than students. University service providers did not appreciate the students' viewpoint when they did not agree with it. Then, students did not try to "put themselves in the other people' shoes" when student were upset at university service providers.

Part 5: The Analysis of the emotional expression and engagement.

The analysis of the emotional expression and engagement indicated that the majority of the university service providers were joyful, and excited. They looked happy and hopeful while they were participating and interacting in the activities. But,

some of them looked so shy and felt uncomfortable (at least at the beginning of the workshop). For the engagement level, the majority of the university service providers were courageous, curious and energized, but some of them looked eagerly and isolated from the group while they were participating in these activities.

The emotional expression and engagement level of students, indicated that the majority of students were joyful, excited, looked happy and hopeful, while they were participating and interacting in the activities. But, some of them looked too shy, but it happened just at the beginning of the activity A. No one looked sad, got bored, looked frustrated and looked uncomfortable in this study. For the engagement level, the majority of students was courageous, curious, looked eagerly and energized while they were participating in these activities. But, some of students isolated from the group in these activities. No one looked that they had low-interested, ignored (did not pay attention to the activity) or looked angry.

5.2 Discussion

The designed co-creation workshop was composed of three main activities. The objectives of these activities were to let students express their pain points and unmet needs related to the current student services, to have university service providers listen to these issues and develop empathy for each others by inversing their roles. Once done, the last activity of brainstorming and new service co-creation activity was used to pretotype some novel service solution ideas.

After three rounds of action research, and modifications made at every round, the researchers met a level of satisfaction related the process flow and output. The format of the co-creation workshop demonstrated that it was able to build empathy between students and service providers, which was a precondition to any successful

co-creation process. The following service co-creation process, using a Lego serious play toolkit to materialize/pretotype the co-created ideas also seemed to work.

At the end of the workshop both students and service providers were happy with the new experience they went through and found it to be very valuable and applicable to develop new novel students' services.

This study was just an initial experiment to test the value of involving students in the co-creation of new services. Until now, few universities co-create services with their students, and the resulting services they created were often lower than students' expectations. Students who voluntary participated in these co-creation workshops also really liked the experience and were open to participate again in future co-creation activities organized by the university.

The value of this initial research it showed that, Yes, it was possible to co-create with students once a level of empathy was developed between service providers and them. Without this initial and critical phase, there was no understanding, no trust and no open mind behavior for positive and constructive discussion and service creation. This study also showed that simple and low cost co-creation techniques using pretotyping were a good tool to materialize ideas and to get a common understanding of what new services could be developed. Another important aspect of this study was that it showed service providers that the best idea not always came from them but it can be co-created with students. For students, it was way to feel that their needs were considered and that their opinions and ideas were valued. So everyone were strongly benefit from using such approaches.

5.3 Implications

Implications for practice:

Stakeholders such as students, parent, university service providers, university faculty and staffs can use the results from this study as a new approach to collaboratively co-create services between them that was more likely to meet everyone expectations since all parties were involved in their creation. For example, the student journey mapping was a very simple and effective way to get student pain points, feedbacks and ideas. Role-play activities were also a fun and entertaining way to share and illustrated problems and to built empathy feelings among participants. Pretotyping was also a simple way to materialized and tested ideas. All these very simple tools and techniques could be easily used and re-applied in various contexts to better test ideas before being implemented.

By using co-creation approaches, the university stakeholders and service providers can better understand the student needs and the weakness of the university services. In order to strengthen the university's competencies this co-creation approach helped the university service providers and developers to better create and provide the novelty student services, then it will drive the university to become the leader in the education war.

The remaining challenges were for university service providers to change their usual way of working and to open up to such collaborative practices. Based on our study some university service providers were concerned that other service providers might not easily accept/adopt such changes of using co-creation process in their business units. But, some university service providers though that it was no problem to implement co-creation approach in their business units because the output of this approach was very useful and helped university service providers to get a better understanding of students' needs before developing new student services.

Implication for research:

The researchers found out that by using the action research methodology, co-creation approach in this study helped to support service innovation in the university contexts by creating value added to the university and students. Zuber-Skerritt and Perry, (2002) argued that action research is an effective and appropriate method for conducting research that support the professional skill and organizational learning, and for developing the participant's managerial soft skills within learning organization in the twenty-first century.

The three action research cycles, helped improving the process while identifying strengths and weaknesses of each approach. This incremental problem solving approach was a powerful tool to test and discover new knowledge related to the co-creation process.

5.4 Limitation and Future Research

There were limitations to this initial study, the first ones were that this study was only conducted in the context of a Thai private university, with only 3 business units represented and involving only graduate students. Nevertheless, the researchers believe that the co-creation process that was used in this study could be easily applied in other types of universities (public) in Thailand and in any other countries. For sure national culture may have an effect on how service providers are willing to interact and put themselves at the same level as students (power distance), but if it was for the good of the university such approach should at least be considered and tested. We proposed an initial set of workshop activities, but these activities can be customized and modified based on the culture and/or objective of the co-creation workshop.

For the future research, the researchers might consider exploring using different activities for Activity C, in order to encourage all participants to better co-create new student service idea generation, since some service providers participants didn't feel too comfortable using a Lego set (maybe a Thai cultural issue?). The researchers would suggest testing other pretotyping techniques in Activity C, but instead of providing a Lego set, which might be perceived as too childish by some mature participants, the researchers suggested providing various materials for building pretotypes such a piece of wood, plastic straws, paper clip, paper, thick paper, glue, rope, plastic tape, etc (like the stationary staff at workplace). These materials might help the university service providers and students feel more comfortable to use it since they were more familiar with them. Other materials liked clay dough, which was malleable and flexible, could be used to physically represent novel service ideas.

The researchers would also suggest to involve undergraduate students and run co-creation workshops which are full day workshops to develop more solid service solutions ideas, since 3 hours workshop was very short to fully brainstorm and co-create novel service ideas.

In conclusion, the researchers were satisfied to see that using co-creation approaches could help creating novel students services and was a way to build trust and empathy between students and university service providers. The happiness showed in the face of all participants at the end of each workshop was by itself a source of satisfaction and success!

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APPENDIX

Appendix A: Satisfaction Survey (for Student Respondent)

Description	Very low extent 1	Low extent 2	Fairy low extent 3	Fairy high extent 4	High extent 5	Very high extent 6
1. To which extent, are student services important to you?	1	2	3	4	5	6
2. To which extent, are student services useful to you?	1	2	3	4	5	6
3. To which extent, do student services meet your needs?	1	2	3	4	5	6
4. To which extent, are you overall satisfied with student services?	1	2	3	4	5	6
5. To which extent, are you satisfied with your interactions with student service providers?	1	2	3	4	5	6
6. To which extent, are you satisfied with the student service's quality that is provides by the university?	1	2	3	4	5	6
7. To which extent, are you satisfied with the student service's novelty that is provides by the university?	1	2	3	4	5	6

(Continued)

Appendix A (Continued): Satisfaction Survey (for Student Respondent)

Description	Very low extent 1	Low extent 2	Fairy low extent 3	Fairy high extent 4	High extent 5	Very high extent 6
8. To which extent, are you satisfied with the student service's variety that is provides by the university?	1	2	3	4	5	6
9. How often were you given the opportunity to provide feedback regarding student services?	Never 1	Almost never 2	Sometimes 3	Fairy often 4	Very often 5	Always 6
10. How often have you been involved or participated in any new student service development process?	Never 1	Almost never 2	Sometimes 3	Fairy often 4	Very often 5	Always 6

Appendix B: Satisfaction Survey (for University Service Provider Respondent)

Description	Very low extent 1	Low extent 2	Fairy low extent 3	Fairy high extent 4	High extent 5	Very high extent 6
1. To which extent, do you think that student services provided by the university are important to the student's life?	1	2	3	4	5	6
2. To which extent, do you think that students services provided by the university make student more satisfied?	1	2	3	4	5	6
3. To which extent, do you think that students services provided by the university meet the student's needs?	1	2	3	4	5	6
4. To which extent, are you satisfied with the overall student services that you provide to students?	1	2	3	4	5	6
5. To which extent, are you satisfied with your interactions with students?	1	2	3	4	5	6

(Continued)

Appendix B (Continued): Satisfaction Survey (for University Service Provider Respondent)

Description	Very low extent 1	Low extent 2	Fairy low extent 3	Fairy high extent 4	High extent 5	Very high extent 6
6. To which extent, are you satisfied with the student service quality that you provide to students?	1	2	3	4	5	6
7. To which extent, are you satisfied with the student service novelty that you provide to students?	1	2	3	4	5	6
8. To which extent, are you satisfied with the student service variety that you provide to students?	1	2	3	4	5	6
9. How often do you give the opportunity to students to provide their feedback about student services?	Never 1	Almost never 2	Sometimes 3	Fairy often 4	Very often 5	Always 6
10. How often do you allow students to be involved or to participate in any new student service development process?	Never 1	Almost never 2	Sometimes 3	Fairy often 4	Very often 5	Always 6

Appendix C: Co-creation Workshop Survey (for Student Respondent)

Description	Very low extent 1	Low extent 2	Fairy low extent 3	Fairy high extent 4	High extent 5	Very high extent 6
1. To which extent, do you think that if you were involved in the student service development process, it could help to create better student services?	1	2	3	4	5	6
2. To which extent, do you think that if you were involved in the student service development process, it could make you more satisfied?	1	2	3	4	5	6
3. To which extent, do you think that student service providers care about students' needs when developing new services?	1	2	3	4	5	6
4. To which extent, do you think that student service providers pay attention to students' needs?	1	2	3	4	5	6
5. To which extent, do you think that student service providers ignore students' needs?	1	2	3	4	5	6
6. To which extent, did this workshop helped you better understand service providers constraints?	1	2	3	4	5	6

(Continued)

Appendix C (Continued): Co-creation Workshop Survey (for Student Respondent)

Description	Very low extent 1	Low extent 2	Fairy low extent 3	Fairy high extent 4	High extent 5	Very high extent 6
7. To which extent, did this workshop helped you increase your empathy toward service providers?	1	2	3	4	5	6
8. To which extent, did this workshop helped you get closer to service providers?	1	2	3	4	5	6
9. How are you overall satisfied with this workshop?	1	2	3	4	5	6
10. What did you like about this workshop?						
11. What you did not like about this workshop?						
12. Please suggest what could be done differently or improved in this workshop?						

Appendix D: Co-creation Workshop Survey (for University Service Provider Respondent)

Description	Very low extent 1	Low extent 2	Fairy low extent 3	Fairy high extent 4	High extent 5	Very high extent 6
1. To which extent, do you think that if students were involved in the student service development process, it could help to create better student services?	1	2	3	4	5	6
2. To which extent, do you think that if students were involved in the student service development process, it could make them more satisfied?	1	2	3	4	5	6
3. To which extent, do you care about students' needs when developing new services?	1	2	3	4	5	6
4. To which extent, do you pay attention to students' needs?	1	2	3	4	5	6
5. To which extent, do you ignore students' needs?	1	2	3	4	5	6
6. To which extent, did this workshop helped you better understand student's needs?	1	2	3	4	5	6

(Continued)

Appendix D (Continued): Co-creation Workshop Survey (for University Service Provider Respondent)

Description	Very low extent 1	Low extent 2	Fairy low extent 3	Fairy high extent 4	High extent 5	Very high extent 6
7. To which extent, did this workshop helped you better understand student's pain points?	1	2	3	4	5	6
8. To which extent, did this workshop helped you increase your empathy toward students?	1	2	3	4	5	6
9. To which extent, did this workshop helped you get closer to students?	1	2	3	4	5	6
10. How are you overall satisfied with this workshop?	1	2	3	4	5	6
11. Would you consider using this co-creation approach with students to develop new services in your unit in the future?						

(Continued)

Appendix D (Continued): Co-creation Workshop Survey (for University Service Provider Respondent)

Description	Very low extent 1	Low extent 2	Fairy low extent 3	Fairy high extent 4	High extent 5	Very high extent 6
12. Please explain the reason why or why not?						
13. What difficulties or barriers do you think may prevent your unit from using co-creation approach? Please explain?						
14. Did you find the output of the co-creation activity (Activity C by using LEGO) to be…Useful/Inspiring/Innovative…?						
15. What did you like about this workshop?						
16. What you did not like about this workshop?						
17. Please suggest what could be done differently or improved in this workshop?						

Appendix E: The Empathy Quotient Questionnaires (For Student Respondent).

Description	The empathy level			
	Strongly disagree 1	Slightly disagree 2	Slightly agree 3	Strongly agree 4
1. When I talk to student service providers, I tend to talk about their experiences rather than my own.	1	2	3	4
2. I can usually appreciate the student service providers' viewpoint, even if I don't agree with it.	1	2	3	4
3. I try to understand student service providers better by imagining how things look from their perspective.	1	2	3	4
4. I believe that there are two sides to every problem and I try to look at them both.	1	2	3	4
5. When I am upset at student service providers, I usually try to "put myself in their shoes" for a while.	1	2	3	4

Appendix F: The Empathy Quotient Questionnaires (for University Service Provider Respondent)

Description	The empathy level			
	Strongly disagree 1	Slightly disagree 2	Slightly agree 3	Strongly agree 4
1. When I talk to students, I tend to talk about their experiences rather than my own.	1	2	3	4
2. I can usually appreciate the students' viewpoint, even if I don't agree with it.	1	2	3	4
3. I try to understand students better by imagining how things look from their perspective.	1	2	3	4
4. I believe that there are two sides to every problem and I try to look at them both.	1	2	3	4
5. When I am upset at students, I usually try to "put myself in their shoes" for a while.	1	2	3	4

Appendix G: Emotional Expression and Engagement Criteria

Group………………………..	Date…………………………….		
Emotional expression:	Positive:	Excited	
		Joyful	
		Happy	
		Hopeful	
	Negative:	Sadness	
		Boredom	
		Frustration	
		Shyness	
		Uncomfortable	
Engagement:	Positive:	Energize	
		Eagerly	
		Curiosity	
		Courage	
	Negative:	Low interest	
		Ignorance	
		Isolate	
		Angry	

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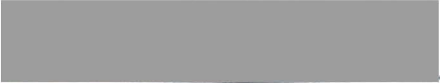
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