

**THE ROLE OF SERVICE INNOVATION IN DIGITAL  
TECHNOLOGY INDUSTRY**

**NOR BALQIS BINTI AMRI**

**UNIVERSITI TEKNIKAL MALAYSIA MELAKA**

## HALAMAN PENGESAHAN PENYELIA

‘Saya/Kami akui bahawa telah membaca karya ini dan pada pandangan saya/kami karya ini adalah memadai dari segi skop dan kualiti untuk tujuan penganugerahan Ijazah Sarjana Muda Teknousahawan.’

Tandatangan : .....

Nama Penyelia : Dr. Hazmilah binti Hasan

Tarikh : .....

Tandatangan : .....

Nama Penilai : Atikah Saadah binti Selamat

Tarikh : .....

THE ROLE OF SERVICE INNOVATION IN DIGITAL TECHNOLOGY  
INDUSTRY

NOR BALQIS BINTI AMRI

Report Submitted In Fulfilment Of The Requirements For The Bachelor Degree Of  
Technopreneurship

FACULTY OF TECHNOPRENEURSHIP AND TECHNOLOGY MANAGEMENT  
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

JANUARI 2020

## HALAMAN PENGAKUAN

“saya akui laporan ini adalah hasil kerja saya sendiri kecuali ringkasan dan petikan yang tiap-tiap satunya saya telah jelaskan sumbernya”

Tandatangan : .....

Nama : Nor Balqis binti Amri

Tarikh : .....

## PENGHARGAAN

Penulis ingin merakamkan penghargaan ikhlas kepada penyelia, Dr Hazmilah bt Hasan atas bimbingan dan dorongan yang diberi sepanjang menjalani projek sarjana Muda ini.

Penghargaan juga ditujukan kepada semua yang terlibat sama ada secara langsung atau tidak langsung membantu menjayakan projek penyelidikan ini. Semoga laporan ini akan menjadi sumber rujukan kepada pelajar lain kelak.

## ABSTRACT

The study conducted to the acknowledge the role of service innovation on digital technology industry in the area of Ayer Keroh, Malacca. The problem that has been identified is what issues related on digital technology towards service innovation. There have three objective of this study (i) to examine the importance of service innovation towards digital technology industry employee, (ii) to identify the most significant impact of strategic process on service innovation in digital technology industry, (iii) to determine the risk of service innovation application in digital technology industry. This research is a quantitative method that using the survey item which is questionnaire. In order to analyse the result, the sample size is 150 respondents which is the population targeted from digital technology industries in Ayer Keroh, Malacca.

**Keywords:** Service Innovation, Strategic Process, Risk

## **ABSTRAK**

*Kajian dijalankan untuk mengenalpasti peranan inovasi servis dalam industri teknologi digital di Ayer Keroh, Melaka. Masalah yang telah dikenal pasti isu-isu yang berkaitan dengan teknologi digital terhadap inovasi servis. Terdapat tiga objektif yang telah dikenal pasti bagi menjalankan kajian ini. Antaranya adalah (i) untuk mengkaji kepentingan inovasi serviterhadap pekerja industry teknologi digital, (ii) untuk mengenalpasti kesan penting proses yang strategik ke atas inovasi servis dalam industry teknologi digital, (iii) untuk menentukan risiko dalam mengaplikasi inovasi perkhidmatan dalam industry teknologi digital. Kajian ini menggunakan kaedah kuantitatif dengan menggunakan kaedah tinjauan dengan mengedarkan risalah soal selidik. Untuk menganalisis hasilnya, saiz sampel adalah 150 responden yang merupakan penduduk yang disasarkan dari industry teknologi digital di Ayer Keroh, Melaka.*

***Kata Kunci : Inovasi Servis, Proses Yang Strategic, Risiko.***

## KANDUNGAN

CHAPTER	CONTENT	PAGE
	<b>PENGAKUAN</b>	iii
	<b>PENGHARGAAN</b>	iv
	<b>ABSTRACT</b>	v
	<b>ABSTRAK</b>	vi
	<b>KANDUNGAN</b>	vii
<b>CHAPTER 1</b>	<b>INTRODUCTION</b>	1
	1.1 Background of the Study	2
	1.2 Problem Statement	3
	1.3 research Objective	3
	1.4 Research Question	4
	1.5 Scope	4
	1.6 Significant Of The Study	5
	1.7 Summary	5
<b>CHAPTER 2</b>	<b>LITERATURE REVIEW</b>	6
	2.1 Definition Of Concept	7
	2.1.1 Service Innovation	7
	2.1.2 Digital Technology	8
	2.1.3 Digital Technology Industry	10



2.2 Issues Related On Digital Technology Towards Service Innovation	12
2.2.1 Training And Learning New Technology	12
2.2.2 Risk	13
2.2.2(i) Data Security	13
2.2.2(ii) Security Of Data Flow	14
2.2.2(iii) Cyberattacks	14
2.2.3 Strategic Process	15
2.2.3(i) Creation Of Customer Value	15
2.2.3(ii) Innovation	16
2.3 Conceptual Framework	17
2.4 Hypothesis	19
2.5 Summary	19
<b>CHAPTER 3 RESEARCH METHODOLOGY</b>	<b>20</b>
3.1 Introduction	20
3.2 Research Design	21
3.2.1 Research Instrument	22
3.2.2 Type Of Research Design	22
3.3 Research Method	23
3.3.1 Quantitative Method	23
3.4 Data Collection Method	24
3.4.1 Primary Data	25
3.4.2 Secondary Data	26
3.5 Location Of Research	26
3.6 Research Strategy	27
3.6.1 Survey Method	27
3.6.2 Population And Sample	28
3.7 Validity And Reliability	29
3.8 Summary	30
<b>CHAPTER 4 RESULTS</b>	<b>31</b>

4.1 Introduction	31
4.2 Section A: Demographic	32
4.2.1 Gender Of Respondents	33
4.2.2 Age Of Respondents	34
4.2.3 Education Level Of Respondents	35
4.2.4 Respondent's Department	36
4.3 Section B: The Importance Of Service Innovation Towards Digital Technology Industry Employee	37
4.4 Section C: The Issues Related On Digital Technology Towards Service Innovation	38
4.4.1 Training And Learning New Technology Of Service Innovation	38
4.4.2 Risk Management For Service Innovation	39
4.4.3 Strategic Process On Service Innovation	40
4.5 Result Of Measurement	41
4.5.1 Reliability Test	41
4.5.2 Validity Test	43
4.6 Hypothesis Testing	46
4.6.1 Multiple Regression Analysis	46
4.7 Summary	48
<b>CHAPTER 5 DISCUSSION AND RECOMMENDATION</b>	<b>49</b>
5.1 Introduction	49
5.2 Discussion Of Descriptive Analysis	50
5.3 Discussion Of Reliability And Validity	50
5.4 Discussion Of Hypothesis	51
5.5 Discussion Of Objectives	53
5.5.1 Objective 1	53
5.5.2 Objective 2	53
5.5.3 Objective 3	54

5.6 Recommendation For Future Research	54
5.7 Summary	55
<b>CHAPTER 6 CONCLUSION</b>	<b>56</b>
6.1 Introduction	56
6.2 Implication Of The Research	57
6.3 Conclusion	58
<b>REFERENCE</b>	<b>59</b>
<b>APPENDIX</b>	<b>61</b>

# CHAPTER 1

## INTRODUCTION

This chapter depicts the role of service innovation in the digital technology industry nowadays. It is also including its background of the study, problem statement, objectives, and its research scope. This summarized a problem statement to suggest a solution to the problem. The solution is mentioned as the objectives of developing this research. Hence, the scope is covered with the functionalities that projects provides. This chapter is arranged according to the series. of 1.1 Background of The Study, 1.2 Introduction of Service Innovation Industry, 1.3 Problem Statement, 1.4 Research Objective, 1.5 Research Question, 1.6 Scope, 1.7 Limitation of Study And 1.8 Significant of Study

## 1.1 BACKGROUND OF THE STUDY

In the globalization era, today's economy has to face countless challenges caused by demographic changes, resources declining of availability, market globalization, and growing international competition.

Service innovation is basically about improving the way you serve your customers to make more prominent incentive for them and furthermore convey more income for your association. It is all about what will your customer experience from your organization. Service innovation is not only developed by service firms, but it also involves product-based firms. The important point is about when service innovation changes the way the customer is served.

When we talk about digital technology, in the shape of numeric code, digital technology is all about the information or records that makes use of all sort of digital gear and applications. This kind of information is actually in code of binary that presents in two characters of numeric usually 0 and 1. Devices that use and also process digital information include cellular telephones, calculators, personal computers, HD TV and many more.

## **1.2 PROBLEM STATEMENT**

The problem that the researcher has been identified is first, the service management system of the company that needs to be in a strategic process. To has a sustainable innovation in its service system.

Furthermore, what researcher can see nowadays, in the era of industry 4.0, companies tend to use workers other than a human which is robots to run the companies. With the adoption of computers, automation and the enhancement of smart and autonomous systems which support data and machine learning, almost 990% what human can do, robots can do. Humans tend to be jobless and if the job is needed, a high skilled worker is in demand. Employees nowadays need training and learning on the new technology that they what to be adapted to.

Besides, with the technology adaptation, cyber risk is highly to occur in any way. Cyber thieves usually seek for big data and they are normally from the competitors itself. This kind of fraud will affect the innovation of the service management of the companies.

## **1.3 RESEARCH OBJECTIVE**

This research consists of three main objectives that look into the role of service innovation in the digital technology industry. Following are the main objectives:

- i) To examine the importance of service innovation towards digital technology industry employees.
- ii) To identify the most significant impact of the strategic process on service innovation in the digital technology industry.
- iii) To determine the risks of service innovation application in the digital technology industry.

## 1.4 RESEARCH QUESTION

This research questions are to determine, to identify and to analyze the role of service innovation in the digital technology industry. This research achieved the research objective by answering the following research questions:

- i) What is the importance of service innovation towards digital technology industry employees?
- ii) What is the most significant impact of the strategic process on service innovation in the digital technology industry?
- iii) What is the risk of the application of service innovation in the digital technology industry?

## 1.5 SCOPE

The scope of this research must have related to this title. It is important to have the main scope to conduct this research. This research was held at digital technology companies in Ayer Keroh, Malacca. The researcher was using questionnaires and data collection techniques as the research model. Target respondents of the questionnaire were workers of companies who related to the service process at companies that applying digital technology and the researcher collect 150 samples from the respondent randomly. The data collection was from real-time to support the research. The results of the research were used for further validation.

## **1.6 SIGNIFICANT OF STUDY**

The importance of this study is in determining the impact, the importance and the risk of factors that contribute to the adoption of service innovation in the digital technology industry. This study can help to expose more in-service innovation by knowing the impact, the importance and the risk of it and also be able to increase the innovation on service by using digital technology among industries in Malaysia. Malaysia also could be a leading country of service innovation in Asia or even in the world.

## **1.7 SUMMARY**

This chapter addressed the implementation of the research which was to investigate the impact, the importance and the risk of service innovation's role in the digital technology industry. Then, to support the problem statements which were the source of the research were stated here. In this chapter, the scope and limitation of the research was combined with the importance of the study, since these were important to support the research outcome.



## **CHAPTER TWO**

### **LITERATURE REVIEW**

A literature review addresses distributed data within a particular subject area, and sometimes information within a given period within a specific subject area (Ramdhani et.al, 2014). The researcher wants to investigate the role of service innovation in the digital technology industry in this chapter. Besides, the most reason of the literature review is to talk about the significant terms and variables which have used for this research study and also to discover the legitimization of the theory for the research and the result of the issues based on the surveys from the past researcher that have done. Literature reviews are planned to supply an outline of sources that the researcher has now investigated with the relevant topics and to bring to the readers how the research fits into the larger study field. A literature review is an objective, systematic overview and critical analysis of the relevant research available and non-research literature on the topics being investigated (Hart, 1998; Cronin, et al, 2008). A great literature review accumulated data related to the subject frame numerous sources. It must be well composed conjointly contains a number of individual predispositions. In this literature review, the researcher will also be identified and outspoke the relationship between the literature and the field of research.

## **2.1 DEFINITION OF CONCEPT**

### **2.1.1 SERVICE INNOVATION**

Service has been around for long time ago that is the beginning of human life and diversity has always been strong. Because of these different qualities, services cannot be viewed as a "normal" trend, rather than in pointing out their operational contrasts to another point of view. The scale and complexity of services has grown impressively over the past three decades. Increased pressure from competition forces companies to provide services in an increasingly competitive, more reliable and more economical manner due to globalization and fast-growing markets such as China and India, social and political shifts, critical customers, and easy access information leading to increased customer demands.

Over the current decade, there has been an increasing emphasis on service across socio-economic sectors, combined with transformational improvement in information and communication technologies (ICTs). Service innovation is about changing how you support your customers and create greater value for them, as well as supplying the company with more revenue. It is all about what will customer experience from our organization. Service innovation not only develops by service firms but also involves product-based firms. The important point is when service innovation changes the way the customer is served.

Widespread deployment of ICTs and rapid developments are key developments in many of these service innovations. There are much importance of ICTs to companies and industries in service sectors and service innovation that have traditionally been known for a long time (Barras 1986). In these traditional approaches to service innovation, ICTs have been recognized as technological tools in the service delivery process, which contribute to service firms' skill and productivity and which can lead to completely modern markets or categories of services over time (Barras, 1990). Contrary to these priorities that distinguish innovation in services industries from innovation in service or innovation generally, another scholar has stated that all economic exchanges are essentially exchanges of services and that ICTs play a crucial

and transformative role as resources in service innovation (Lusch and Vargo 2014; Vargo and Lusch 2004, 2008a, 2008b)

From this perspective, ICTs combine with other resources (such as skills and knowledge) to allow data to be transported and repackaged in different contexts in order to create new opportunities for service exchange and also innovation (Lusch and Vargo 2014). Similarly, recent work on digital infrastructure (Tillson et al. 2010) has highlighted the generative value of digital technologies (Henfridsson and Byzstad 2013), which can promote a combination of service innovation potential (Yoo et al. 2012). Such view, together with other theoretical viewpoints that we find in the blink of an eye, suggest other ways of understanding service as we seek to create new knowledge in advance age about service innovation.

### **2.1.2 DIGITAL TECHNOLOGY**

In the shape of numeric code, digital technology is about the information that uses all sorts of electronic hardware and applications. This information of digital is actually in binary or parallel code that presents in two numeric characters usually 0 and 1. Gadgets that use and also process digital information include personal computers, calculators, cellular telephones, HD TV and numerous more. Computing capabilities grew exponentially in scope and increasingly decreased in cost over few decades (Moore 1974), which contributed to the wide range of IT or so-called digital technology-based work automation in businesses, public administrations, and private households today.

In early 2018, Amazon launched a basic supply store that operates without a check-out line (Wingfield 2018), which was rendered conceivable through the use of digital technologies such as computer vision and machine learning. An obvious consequence in this case is that a store without checkout lines makes the cashiers excessive. Given the reality that Amazon claims that people do not lose their job but only change parts. But job losses caused by digitalization are possible in another case.

Whereas Amazon Go certainly marks a major change with regard to how people or customers buy groceries. It is not as innovative as it might seem based on the excessive coverage in the media.

The same applies to IoT which is the Internet of Things which will soon use the same technology to network nearly all physical items for human users and other objects as "smart" objects (Oriwoh et al. 2013). Evans (2012) called the resulting infrastructure an "internet of Everything" that links intelligent objects, humans, and data to deliver value through linked digital processes.

Digitally connected artifacts constituting the Internet of things are an important promoter for advanced digital services. It is about digitally linked devices being smart gadgets as they combine "technologies for actuation, sensing, synchronization, connectivity, power, etc." (National Science Foundation 2016, p. 2). At this point, the smart device encouraged smart service systems (Beverungen et al. 2017a). In these systems, smart objects can independently track, optimize, or remotely control smart devices or it can autonomously adjust to their environment (Beverungen et al. 2017b). Smart service is transmitted to or through an intelligent entity that can sense its condition and environment and thus allows data collection in real time, continuous communication and interactive feedback (Wunderlich et al. 2015). The gadgets will provide companies with data on the uses of the products that enable new data-based services to be developed, and smart devices will also evolve into platforms to deliver services remotely (Beverungen et al. 2017b)

### 2.1.3 DIGITAL TECHNOLOGY INDUSTRY

The digital transformation of services was explained in (Benkenstein et al. 2017) by reusing interpretation of (Porter's and Heppelmann's 2014) which consists of in three waves of IT transformation: Wave 1 refers to the use of IT as a method for automating single activities; Wave 2 refers to IT adoption and supplanting of increasing processes chains and digital infrastructures accessibility to promote and cooperate; Wave 3 refers to digitalization of products or service.

The digital technology industry or so-called smart industry could be equivalent word for industry 4.0 or industrial transformation. Examples of industry 4.0 such as , cloud computing, augmented reality, autonomous robots, big data, simulation, additive manufacturing, system integration and the internet of things and cybersecurity. All of that related to the fourth industrial revolution and the different innovative enablers of that revolution. But, what around all of the smart or intelligent things? From the mentioned smart manufacturing, smart industry or keen industry and keen production line to the smart grid, smart cities, smart buildings, smart mobility, smart services, smart supply chain, smart workplace, and all those other 'smart' things. There are such examples of the smart industry: -

- Smart hotel

Everything from the homes we live in the way our towns are overseen, smart technology is changing them. the hospitality business is no exception in this way (John Attala,2019). The hospitality industry is promoting the introduction of smart technology. Start from the operation to the experience of the guest to the marketing, a variety of cost-saving and opportunities that smart hotel technology have to offers for revenue. And it is also additionally empowering hotel owners to meet new standards to gain profits. Smart hotel technology uses smart energy management which helps in reduce cost, use big data and big data protection for customer recognition, smart reserve parking for customers amenities, mobile room keys which just using apps on mobile for a key system and many more that will be reshaping the hotel industry very shortly.

- Siri by Apple

With extensive behavioral algorithms, nowadays it is called A.I. systems are only suited to our likes and dislikes because of its advanced machine learning software. Such computers, while incredibly useful, are not becoming smarter in the existential sense but based on a large dataset, they are progressing their usefulness and skills. Siri is the one that's used today's most common Artificial. Everyone knows Apple's assistant very well. She is an amiable voice-activated machine with which we can communicate. She will certainly help us to find information, gives us directions, add events to our calendars, helps us send messages etc. As an personal assistant of intelligent digital, she uses machine-learning technology to encourage us to be smarter and better able to predict and comprehend our natural-language queries and questions,.

- Amazon Go

To buy an item at an Amazon Go store, the customer have to create an account of Amazon Go at first. Use their smartphone and install the Amazon Go app. Upon entering the retail store, once these things are in place, the customer scans them by using their Amazon Go app which located on their cellular or smartphone. Customer is freely to walk around the store, make purchase and include and replace items to or from their virtual cart (Amazon Go Editorial Staff, 2017).

Amazon Go relies heavily on technological innovation which it is sensing automatically when an item is picked up, put back on the shelf and eventually tracks who committed the act. Customer can simply walk out the door once they satisfied with the items chosen which there is no lines, no waiting and no checkouts. By using Amazon account, the items that customer purchased are charged. And also a receipt of purchase is sent to that Amazon Go app (Amazon Go Editorial Staff, 2017). The system is heavily relies on vision of computer, sensor fusion, and algorithm of deep learning.

## **2.2 ISSUES RELATED ON DIGITAL TECHNOLOGY TOWARDS SERVICE INNOVATION**

### **2.2.1 TRAINING AND LEARNING NEW TECHNOLOGY**

As the company nowadays, most of them are using industry 4.0 which product or service can be made by itself intelligently and the workforce that used is reduced, the company has to select the right talent for innovation and can only provide the workforce with training resources for innovation and also developing a core competency for innovation. For a company, only the right talent or, employees can learn new techniques that can be chosen as a workforce. It is important to select the right profile talent that has the ability naturally which is creative and if complementing this talent will complementing the members of the design team too. Creative thinking skills include the systematic arrangement of sense, critical thinking and use of data and allow time for thinking or ruminating. (Davila, Epstein and Shelton, 2005)

Besides, for job seekers nowadays, they have to keep their qualifications relevant to today's industries. Probably, they have to learn things about Artificial intelligence (AI). Since the mcomplexity involved, there are varying the interpretations of what AI is and what goes into developing AI in developing synthetic intelligence which compared to human intelligence. Some authors prefer to use "Computer Intelligence" as the term rather than AI. AI learning comprises machine learning which involves developing new skills through instruction or practice, acquiring new knowledge and also representation and experimentation the knowledge. Machine learning is the modeling of different aspects of the computer learning process. Machine learning have it key goals whereas for the algorithm to self-learn and improve it through experience (Reddy,2018).

### **2.2.2 RISK**

As adopting the digital industry on service innovation, there will be a lot of risks to face on such as security risk. The higher you innovate the product or service, the more the risk will come. A good management strategy shows when a company could manage risk effectively. In identifying, analyzing and responding to risks, risk management in the sense of project management must be detailed and also systematic in order to attain project goals (A. Banaitiene and A. Banaitis, 2012). As the top priority for the companies, companies concern about security which represents the biggest barrier to the take-up of remote service solutions. Security actually can take different forms, the security of data flows, most notably data security, and also the protection of the rights of Intellectual Property.

#### **2.2.2.(i) Data security**

For data security, it refers to guaranteeing that data to be protected from unauthorized access. To make data safe, manufacturers have to establish a secure communication path, encrypting data and secure authentication. Putting factory data on the cloud is still a very sensitive issue for many manufacturers, even though much of the financial and banking runs through the same systems. However, sometimes many cloud computing services have suffered outages and in such times its users can hardly do anything (Modi,2012). This has the potential to seriously damage firms' operations and also their reputation.