



UNIVERSITI PUTRA MALAYSIA

***SUSTAINABILITY IMPROVEMENT OF PUBLIC TOILETS AT TELUK
KEMANG, MALAYSIA***

RAJENDRAN KOBALU

FPSK(M) 2018 23



**SUSTAINABILITY IMPROVEMENT OF PUBLIC TOILETS AT TELUK
KEMANG, MALAYSIA**

By

RAJENDRAN KOBALU

**Thesis Submitted to the School of Graduate Studies, Universiti Putra
Malaysia, in Fulfilment of the Requirements for the Degree of Master of
Science**

March 2018

COPYRIGHT

All material contained within the thesis, including without limitation text, logos, icons, photographs and all other artwork, is copyright material of Universiti Putra Malaysia unless otherwise stated. Use may be made of any material contained within the thesis for non-commercial purposes from the copyright holder. Commercial use of material may only be made with the express, prior, written permission of Universiti Putra Malaysia.

Copyright © Universiti Putra Malaysia



DEDICATION

This thesis is dedicated to my beloved wife and family.

Thank you for your understanding and support all throughout these years



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in
fulfilment of the requirement for the degree of Master of Science

**SUSTAINABILITY IMPROVEMENT OF PUBLIC TOILETS AT TELUK
KEMANG, MALAYSIA**

By

RAJENDRAN KOBALU

March 2018

Chairman : Karmegam Karuppiah, PhD
Faculty : Medicine and Health Sciences

It is important to maintain public hygiene and sanitation by providing clean public toilets with sufficient water supply in public and tourist spot. Hence, this study is carried out to investigate patrons' expectations and perceptions of service quality in public toilet facilities provided and measures their "satisfaction gap." A total of 599 patrons were involved in this study which was carried out in Teluk Kemang beaches along Port Dickson coastline, Strait of Malacca (Malaysia). A modified SERVQUAL 26-item instrument was used to assess patrons' expectations before and their perceptions after using public toilets facilities provided in the area. SERVQUAL is made up of five dimensions which are Tangibles, Reliability, Responsiveness, Assurance and Empathy. The present study utilised standardised self-completion questionnaire where convenience sampling method was utilised. The "satisfaction gap" was then measured. The results showed that monthly income, gender, age group and educational level were significantly associated ($p < 0.05$) with overall satisfaction of the respondents. There was a significant difference between the satisfactions towards service provided ($p < 0.001$) with regard to all of the SERVQUAL dimensions. The most significant factors of service quality were gender, monthly income, responsiveness, reliability, tangible and assurance. In conclusion, service providers should give emphasis to the patron's individual attention and emotional aspects of care since this dimension are very important in measuring service quality.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk ijazah Master Sains

**KEMAMPAHAN PENAMBAHBAIKAN TANDAS AWAM DI TELUK KEMANG,
MALAYSIA SEMBILAN**

Oleh

RAJENDRAN KOBALU

Mac 2018

Pengerusi : Karmegam Karuppiah, PhD
Fakulti : Perubatan dan Sains Kesihatan

Ia adalah penting untuk mengekalkan kebersihan awam dan sanitasi dengan penyediaan tandas awam yang bersih dengan bekalan air yang mencukupi di kawasan awam dan pelancong. Oleh itu, kajian ini dijalankan untuk menyiasat jangkaan pelanggan dan persepsi mereka tentang kualiti perkhidmatan di kemudahan tandas awam yang disediakan dan mengukur "jurang kepuasan" mereka. Sebanyak 599 pengguna terlibat dalam kajian ini yang dijalankan di pantai Teluk Kemang di Pantai Dickson, Selat Melaka (Malaysia). Instrumen 26-item SERVQUAL yang diubah suai digunakan untuk menilai jangkaan pelanggan sebelum dan persepsi mereka selepas menggunakan kemudahan tandas awam yang disediakan di kawasan tersebut. SERVQUAL terdiri daripada lima dimensi iaitu Kecepatan, Kebolehpercayaan, Responsif, Jaminan dan Empati. Kajian ini menggunakan soal selidik lengkap selaras sendiri di mana kaedah pensampelan mudah digunakan. "Jurang kepuasan" kemudian diukur. Keputusan kajian ini menunjukkan bahawa pendapatan bulanan, jantina, kumpulan umur dan pendidikan adalah saling berkaitan dengan $p < 0.05$ dengan kepuasan keseluruhan responden. Terdapat perbezaan yang signifikan antara kepuasan terhadap perkhidmatan yang diberikan ($p < 0.001$) berkenaan dengan semua dimensi SERVQUAL. Faktor-faktor yang paling ketara dalam kualiti perkhidmatan ialah jantina, pendapatan bulanan, responsif, kebolehpercayaan, ketara dan jaminan. Kesimpulannya, pembekal perkhidmatan harus memberikan penekanan yang khusus kepada perhatian individu dan aspek emosi penjagaan kerana dimensi ini sangat penting dalam mengukur kualiti perkhidmatan.

ACKNOWLEDGEMENTS

Firstly, I would like to express my deep gratitude to Dr. Indrakaran Karthigesu, my first research supervisor, for his patient guidance, enthusiastic encouragement and useful critiques during the early part of this research work. I would also like to thank Dr. Karmegam Karuppiah, my new research supervisor for his advice and willingness to give his time so generously which was very much appreciated. I would also like to extend my thanks to Dr Vivien How for her patient guidance throughout my study. My gratefulness and thanks are also extended to all members of this department for their great teamwork and cooperation in making this research project a success.

I would also like to extend my thanks to everyone from PEMANDU, KPKT, MPPD, and UniKL MITEC for the supports. This also includes all the respondents who were willing to participate in this study and gave me their precious time to help me along the way.

Finally, I wish to thank my family for their support and encouragement throughout my study. Last but not least, to all who had directly and indirectly given their encouragement which was very needed in helping me during my pursuit of knowledge here in Universiti Putra Malaysia.

I certify that a Thesis Examination Committee has met on 28 March 2018 to conduct the final examination of Rajendran a/l Kobalu on his thesis entitled "Sustainability Improvement of Public Toilets at Teluk Kemang, Malaysia" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

Members of the Thesis Examination Committee were as follows:

Suresh Kumar Subbiah, PhD

Senior Lecturer

Faculty of Medicine and Health Sciences

Universiti Putra Malaysia

(Chairman)

Irniza binti Rasdi, PhD

Senior Lecturer

Faculty of Medicine and Health Sciences

Universiti Putra Malaysia

(Internal Examiner)

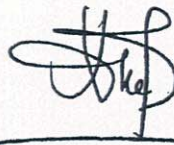
Siti Munira binti Yasin, PhD

Senior Lecturer

Universiti Teknologi MARA

Malaysia

(External Examiner)



NOR AINI AB. SHUKOR, PhD

Professor and Deputy Dean

School of Graduate Studies

Universiti Putra Malaysia

Date: 28 June 2018

This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science.

The members of the Supervisory Committee were as follows:

Karmegam Karuppiah, PhD

Senior Lecturer
Faculty of Medicine and Health Sciences
Universiti Putra Malaysia
(Chairman)

Vivien How, PhD

Senior Lecturer
Faculty of Medicine and Health Sciences
Universiti Putra Malaysia
(Member)

ROBIAH BINTI YUNUS, PhD

Professor and Dean
School of Graduate Studies
Universiti Putra Malaysia

Date:

Declaration by graduate student

I hereby confirm that:

- this thesis is my original work;
- quotations, illustrations and citations have been duly referenced;
- this thesis has not been submitted previously or concurrently for any other degree at any other institutions;
- intellectual property from the thesis and copyright of thesis are fully-owned by Universiti Putra Malaysia, as according to the Universiti Putra Malaysia (Research) Rules 2012;
- written permission must be obtained from supervisor and the office of Deputy Vice-Chancellor (Research and Innovation) before thesis is published (in the form of written, printed or in electronic form) including books, journals, modules, proceedings, popular writings, seminar papers, manuscripts, posters, reports, lecture notes, learning modules or any other materials as stated in the Universiti Putra Malaysia (Research) Rules 2012;
- there is no plagiarism or data falsification/fabrication in the thesis, and scholarly integrity is upheld as according to the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) and the Universiti Putra Malaysia (Research) Rules 2012. The thesis has undergone plagiarism detection software.

Signature: _____ Date: _____

Name and Matric No: _____ Rajendran Kobalu GS39339

Declaration by Members of Supervisory Committee

This is to confirm that:

- the research conducted, and the writing of this thesis was under our supervision;
- supervision responsibilities as stated in the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) are adhered to.

Signature: _____

Name of Chairman of

Supervisory Committee: _____ Dr. Karmegam Karupiah

Signature: _____

Name of Member of

Supervisory Committee: _____ Dr. Vivien How

TABLE OF CONTENTS

	Page
ABSTRACT	i
ABSTRAK	ii
ACKNOWLEDGEMENTS	iii
APPROVAL	iv
DECLARATION	vi
LIST OF TABLES	x
LIST OF FIGURES	xi
LIST OF APPENDICES	xii
LIST OF ABBREVIATIONS	xiii
 CHAPTER	
 1 INTRODUCTION	 1
1.1 Background	1
1.2 Problem Statement	3
1.3 Significance of the Study	4
1.4 Objective of Study	5
1.4.1 Specific Objectives	5
1.5 Study Hypotheses	5
1.6 Conceptual Framework	5
1.7 Definition of Term	8
1.7.1 SERVQUAL model	8
1.7.2 Gap score (satisfaction gap)	9
1.7.3 Satisfaction	9
 2 LITERATURE REVIEW	 10
2.1 Introduction	10
2.2 Types of Toilets in Malaysia	10
2.2.1 Water closet (WC) pans	10
2.2.2 Pedestal WC pan	10
2.2.3 Close coupled WC suite	11
2.2.4 Squatting WC pan	11
2.2.5 Wall hung WC pan	11
2.2.6 Flushing surface	11
2.2.7 Foot rest plate	11
2.2.8 Water seal	11
2.2.9 One-piece WC pan	11
2.2.10 Pedestal WC pan for child	11
2.2.11 Pedestal WC pan for disabled	12
2.3 Location of Study	15
2.4 Public Toilets in Malaysia	18
2.5 Tourism	21
2.6 Toilets and Tourists	21
2.7 Sanitation	22
2.8 Importance of Sanitation	22

	2.9	Satisfaction	24
	2.10	Service Quality	25
	2.11	SERVQUAL	30
	2.12	Customer Satisfaction and Service Quality	34
	2.13	Summary	35
3		METHODOLOGY	36
	3.1	Study Location	36
	3.2	Study Design	37
	3.3	Study Population	38
	3.4	Sampling	38
		3.4.1 Study framework	38
		3.4.2 Sampling method	38
		3.4.3 Sample size	40
	3.5	Study Instrumentation	40
	3.6	Data Analysis	42
		3.6.1 Type of data analysis	42
		3.6.2 Univariate analysis	42
		3.6.3 Bivariate analysis	42
		3.6.4 Multivariate analysis	43
	3.7	Quality Control	43
		3.7.1 Pre-test	43
		3.7.2 Reliability Test	43
		3.7.3 Validity test	45
	3.8	Ethical Consideration	46
4		RESULTS AND DISCUSSION	48
	4.1	Introduction	48
		4.1.1 Data Screening	48
	4.2	Respondents' Socio-demographic characteristics	48
	4.3	Expectation, service and gap scores	52
	4.4	Association between sociodemographic and overall satisfaction of the respondents	54
	4.5	Comparison the differences between SERVQUAL dimensions (gap score) and overall satisfaction of the respondents.	56
	4.6	Factors associated with overall satisfactions of the respondents	57
5		SUMMARY, CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH	61
	5.1	Conclusions	61
	5.1.1	General Conclusions	61
	5.1.2	Specific Conclusions	61
	5.2	Study Limitations	61
	5.3	Recommendations	62
		REFERENCES	63
		APPENDICES	77
		BIODATA OF STUDENT	89
		PUBLICATIONS	90

LIST OF TABLES

Table		Page
2.1	Related Studies on Impact of Service Quality On Customer Satisfaction	28
3.1	Item Total Statistics for The Reliability Test.	44
3.2	Rotation Component Matrix.	46
4.1	Socio-Demographic of The Respondents Who Participated in The Study (N=599)	49
4.2	The Service Expectation, Service Perception And Gap Scores.	54
4.3	Association Between Sociodemographic And Overall Satisfaction of The Respondents. (N=599)	56
4.4	Comparison of Median Servqual Dimensions (Gap Score) And Overall Satisfaction of The Respondents	57
4.5.	Factors Associated with Overall Satisfaction Of The Respondents	59

LIST OF FIGURES

Figure		Page
1.1	Conceptual Framework	7
2.1	Illustration Of Low Capacity Pedestal Water Closet (WC) Pan - (Closed Coupled)	12
2.2	Illustration Of Low Capacity Pedestal Water Closet (WC) Pan - (Independent Cistern)	13
2.3	Squatting WC Pan	14
2.4	Illustration Of Low Capacity Water Closet (WC) Pan (Wall Hung)	15
2.5	White Sands Of Teluk Kemang Beach In Port Dickson, Negeri Sembilan	16
2.6	Beautiful Blue Water Of Teluk Kemang Beach In Port Dickson, Negeri Sembilan	17
2.7	Public Toilets Of Teluk Kemang Beach In Port Dickson, Negeri Sembilan	17
2.8	Larger View Including Rear View Of The Public Toilet Teluk Kemang Beach In Port Dickson, Negeri Sembilan	18
2.9	Public Toilets In Beaches And Public Areas Around Malaysia	20
3.1	Geographical Location Of Teluk Kemang	37
4.1	Gender Demographics Of The Respondents	49
4.2	Age Group Of The Respondents	50
4.3	Nationality Of The Respondents	50
4.4	Education Levels Of The Respondents	51
4.5	Occupation Levels Of The Respondents	51
4.6	Monthly Income Levels Of The Respondents	52
4.7	Marital Status Of The Respondents	52

LIST OF APPENDICES

Appendix		Page
1	Questionnaire	77
2	Information Sheet in Bahasa Malaysia	81
3	Information Sheet in English Language	83
4	Consent Form	85
5	Approval Letter from JKEUPM	86



LIST OF ABBREVIATIONS

CNTA	China National Tourism Administration
FS	Fuzzy Set
GDP	Gross Domestic Product
HPWS	High-Performance Work Systems
JKT	Jabatan Kerajaan Tempatan
KPKT	Kementerian Kesejahteraan Bandar, Perumahan dan Kerajaan Tempatan & Ministry of Urban Wellbeing, Housing and Local Government
MDGs	Millennium Development Goals
MPPD	Majlis Perbandaran Port Dickson
MSc	Master of Science
MTB	Malaysian Tourism Board
MTGC	Malaysian Tourist Guides Council
NKEAs	National Key Economic Areas
PEMANDU	Performance Management Delivery Unit
PhD	Doctor of Philosophy
PSDT	Public Service Delivery Transformation
QCA	qualitative comparative analysis
SERVQUAL	Service Quality
SPM	Sijil Pelajaran Malaysia
UNICEF	United Nations Children's Fund
UPM	Universiti Putra Malaysia
UN	United Nations
UniKL	Universiti Kuala Lumpur
UniKL MITEC	Universiti Kuala Lumpur Malaysian Institute of Industrial Technology
UNISEL	Universiti Industri Selangor
UXL	User Experience Life Cycle
WC	Water Closet
WHO	World Health Organisation
WTO	World Toilet Organisation

CHAPTER 1

INTRODUCTION

1.1 Background

Toilets are one of the most common public facilities that are used by people and usually located within indoors. According to the World Health Organisation (WHO) and the United Nations (UN), in order to create a healthier and safer environment, the toilet should always be kept clean. Therefore, it is vital to consistently maintain the cleanliness of the toilet in best quality possible in order to keep the area hygienic and sanitary (WHO & UNICEF, 2014, UN Water, 2014, UN, 2015, Brookes and Carey, 2015).

The importance of maintaining public hygiene and sanitation has been highlighted by the health advisory bodies worldwide, such as the WHO (1996), and UN Water (2006). The WHO and UN Water have emphasised that it is crucial to ensure the environmental sanitation in public and tourism spots by providing clean toilets with sufficient water supply. In addition, WHO further outlined the responsibilities of the relevant stakeholders to provide public toilets which should adhere to the vital criterias such as, (i) every station must provide a sufficient number of toilets in order to facilitate the maximum number of users at each one time; (ii) there should be at least one permanent maintenance staff for each toilet; (iii) the maintenance staff shall provide enough soap, toilet paper, and clean water to the users; and (iv) toilet facilities should be cleaned several times every day (WHO, 1996, UN Water, 2006).

In addition, the stakeholders must also ensure that each toilet unit is supplied with clean and sufficient water. The practice of chlorination of water storage tanks for the toilets must also be implemented if the water quality does not meet the local quality standards. At the same time, toilets should be located far from food storage or display areas. The stakeholders must also ensure that hand washing basins with clean water and soap must also be provided in each toilet and the waste must be disposed-off safely where its collection must be organised appropriately in order to prevent flies and vermin.

Port Dickson in the state of Negeri Sembilan of Malaysia is well known as a crucial tourist spot for Malaysia's tourism industry. It is located in the coastal area and has a number of beaches which are crucial to the tourism industry. It is therefore crucial that the tourists' satisfaction is of utmost importance to ensure the continuous development of this tourist hotspot going forward (Neal and Gursoy, 2008). Past studies have showed that the tourist's dissatisfaction may stem from a multidimensional constructive interaction between the tourists and the elements at the tourism site (Pizam et al., 1978, Dusi et al., 2016). Other studies emphasised that a tourists' overall satisfaction levels should be

examined by taking into consideration any possible elements that relate to both the attraction site and the services provided (Whipple and Thach, 1988, Kozak and Rimmington, 2000, Kuuder et al., 2013).

For the Pantai Teluk Kemang (Kemang Bay Beach) in Port Dickson, the tourists' improvement perception of the public toilet facilities is of a major concern. It is crucial that the best service quality is delivered to satisfy the customers' needs and this has to be considered an essential strategy for success and survival in today's competitive tourism environment (Parasuraman et al., 2005, Yarimoglu, 2015). Therefore, this study aims to evaluate the service quality that satisfies the needs of the public toilet users by measuring the quality of the current service provided by the public toilet service provider.

Health is a fundamental human characteristic of social investment. Healthy environments with clean, safe living conditions are therefore extremely important and a critical indicator of the success and well-being of mankind. Of all the aspects and areas related to public health and the environment, the quality of public sanitation has received most attention since the early 2000s. At the World Toilet Summit in Moscow in 2006, experts from a variety of locations further advocated a global approach to the quality of public toilets whereby considerations should be based on four key aspects: comfort, access, safety and hygiene. All of these aspects are linked; for example, access to public toilets is directly and indirectly related to the comfort, safety and hygiene of the public (Siu and Wong, 2013). Poor stakeholder relationships are serious stumbling blocks to tourism sustainability in any tourists areas, as the environmental, social, economic, and cultural well-beings of some of these stakeholders are compromised by other stakeholders (Ng et al., 2017).

Traditionally, economic prosperity has been linked to growth in the agricultural and manufacturing sectors as well as the influx of foreign capital. Whilst, the role of tourism in economic growth has often been downplayed and regarded as a non-growth-oriented sector, hence attracting little attention of both economists and policymakers. Today, tourism has become one of the rapidly growing services sectors of the world. Tourism is one of the largest global economic sectors and its importance is rising. This has prompted the Malaysian government to set tourism as a key sector for invigorating Malaysia's long-term economic growth. Specifically, the 10th Malaysia Plan (2011 - 2015) and 11th Malaysia Plan (2016 – 2020) has identified the tourism sector as one of the National Key Economic Areas (NKEAs) for transforming Malaysia into a high income nation by 2020 (Tang and Tan, 2015). Tourism has been an important industry in Malaysia for a number of years (Ghaderi et al., 2012). Malaysian tourism industry, is a fast growing industry in which it has expanded tremendously and brings in huge revenues to the country. Malaysia's popularity can be attributed to a rich natural and cultural heritage and the diversity of attractions in the different states which make up the Malaysian Federation (Ghaderi et al., 2012, Hassan, 2014). Realising its significant potential for the economic development, the Malaysian Tourism Board (MTB), which is

responsible to promote the country, has been aggressive in promoting Malaysia with aim to attract tourists to Malaysia (Hassan, 2014).

1.2 Problem Statement

There have been millions of ringgits that have been spent into cleaning public toilets especially in tourists areas but there has been a very slow improvement. In 2013, Local Government and Urban Wellbeing Minister Datuk Abdul Rahman Dahlan was quoted as saying during a World Toilet Day celebration in Putrajaya that 61% of the 10,257 public toilets in the country were a still not up to the required standard. There were only 350 or 3.4% achieved the top five-star rating while 1,086 or 10% were too dirty even to meet the minimum one-star. Each year RM5mil is allocated to local councils to improve toilets and before the launch of Visit Malaysia Year 2014, another RM2.5mil was allocated. The additional funds were disbursed in the wake of complaints about dirty public toilets at major tourist destinations around the country (Loh, 2014, Veera Pandiyan, 2015).

At the 2015 World Toilet Day event at Batu Burok in Terengganu on Nov 19 2015, Local Government and Urban Wellbeing Minister Datuk Abdul Rahman Dahlan mentioned that most of the toilets in food courts, malls, petrol stations, tourists areas and government offices do not provide essentials like soap and toilet paper, there are stains and shoeprints on seats, the floors are constantly wet, doors are vandalised, taps don't work and there is graffiti on walls in addition to the overpowering stench. Public toilets are now under the purview of the Federal Government's control in accordance with the Solid Waste Management and Public Cleansing Act (Act 672). It is expected millions of more ringgits will be spent to clean toilets in the name of promoting tourism and luring foreign visitors (Loh, 2014, Veera Pandiyan, 2015).

This study will evaluate the public (tourists) satisfaction that uses the public facilities, i.e. the public toilet. Satisfaction is defined as the perceptions of quality, expectations and preferences (Wicks and Roethlein, 2009). Satisfaction plays an important role in the tourism industry. Poor sanitation and unhygienic practices may induce sanitation-related diseases. Past studies have showed that the satisfaction levels are closely associated with the measurement of service quality (Cronin Jr and Taylor, 1992, Bittner and Hubbert, 1994, Chen, 2008). In other words, the stakeholder shall first resolve the causes of dissatisfaction among end-users (tourists) and provide a product or service with excellent and attractive quality to the tourists. In view of this, the level of satisfaction towards the sanitation is the core element to examine among the patrons (the tourists) of the public toilet.

1.3 Significance of the Study

Although our public toilets have improved in recent years, our progress has been very slow when compared to our neighbouring countries such as Thailand and Singapore. Former Housing and Local Government Minister Datuk Seri Chor Chee Heung mentioned that the quality of our public toilets remained undesirable despite calls for keeping them clean because the government had failed to implement strict punitive system. Feedback from foreign tourists on many aspects of the country has been generally positive with the exception of public toilets. Hence this is a very major issue for the country (Loh, 2014, Veera Pandiyan, 2015).

It has been urged for the federal government to increase allocations for the ministry to organize cleanliness campaigns and competitions in order to improve public awareness on cleanliness especially in tourists spots. According to the former Housing and Local Government Minister Datuk Seri Chor Chee Heung, there are already enough public toilets for the convenience of the public or tourists, but more toilets need to be built at some major sightseeing spots. The Malaysian Tourist Guides Council (MTGC) president Jimmy Leong said the government must strive to enhance the public awareness on cleanliness and make them treat the public toilets as their own toilets at home. When MTGC brought tourists to public toilets, they would look for cleaner ones because they knew the image of Malaysian public toilets was of utmost importance as it would reflect the quality of Malaysian people. Among the most common problems with our public toilets are broken or removed doors, graffiti, etc. This will affect the image of the country among foreigners (Loh, 2014, Veera Pandiyan, 2015).

Parasuraman et al. (1985) pointed out that the manifestations of service quality would influence customer satisfaction (Parasuraman et al., 1985). Disconfirmation is the element that decides the quality of the services provided. In the service industry, service quality is an important prerequisite to achieve customer satisfaction (Cronin Jr and Taylor, 1992). Service quality is also a key element that determines if a customer will repurchase the service or not. Improvements to the service quality would therefore improve the customers' satisfaction as well as repurchase intent (Anderson et al., 1994). Service quality therefore significantly influences customer satisfaction and repurchase intent (Lee and Cheng, 2018).

Therefore, this study is important to assessing the customers (tourists) satisfaction levels of the quality services provided by the stakeholders of public toilet in tourists' spots (specifically beaches).

1.4 Objective of Study

To test the association between Service Quality and Satisfaction of Public Toilet Facilities at Pantai Teluk Kemang, Port Dickson, Negeri Sembilan.

1.4.1 Specific Objectives

- i. To determine the service expectations, service perceptions and gap score of respondents with regard to public toilets facilities.
- ii. To test the association of socio-demographic characteristics and overall satisfaction of the respondents.
- iii. To compare the differences between five dimensions (tangibles, reliability, responsiveness, assurance and empathy) and overall satisfaction of the respondents.
- iv. To test the factors (socio-demographic characteristics) against the five dimensions (tangibles, reliability, responsiveness, assurance and empathy) and their association with overall satisfactions of the respondents.

1.5 Study Hypotheses

Following are the hypotheses for our study:

- i. There is a significant association between socio-demographic characteristics and overall satisfaction of the respondents.
- ii. There are significant differences between five dimensions (tangibles, reliability, responsiveness, assurance and empathy) and overall satisfaction of the respondents.
- iii. There is a significant association between factors (socio-demographic characteristics), and five dimensions (tangibles, reliability, responsiveness, assurance and empathy) with overall satisfactions of the respondents.

1.6 Conceptual Framework

Figure 1.1 shows the conceptual framework of this study. The service quality of public toilets is recognised as the independent variable which is then examined by considering a few elements, such as tangible, reliability, responsiveness, assurance and empathy which are the 5 dimensions of a tool named SERVQUAL. SERVQUAL approach is based on the assumption that service quality is the difference between customer's expectations and the actual service performance of the service being consumed.

The dependent variable is the public satisfaction level on the public toilet services of the patrons at the public tourist's spot. In order to evaluate satisfaction and quality of the public toilet in Pantai Teluk Kemang, Port Dickson, a tool named SERVQUAL is used (Parasuraman et al., 2005). The 5 dimensions of SERVQUAL, tangible, reliability, responsiveness, assurance and empathy are directly connected to Service Expectations and Service Perceptions. The dash line shows interconnectedness of Service Expectations and Service Perceptions factors and the socio-demographic characteristics (Gender, Age Group (years old), Nationality, Education, Occupation, Monthly Income (RM) and Marital status) of the patrons are determined as well. There are gaps from the Patrons Between Service Expectations and Service Perceptions. Service Expectations is made up of Words of mouth communication, Past experiences and Personal needs. Public satisfaction on public toilet services depends on Service Expectations. It has to be noted that "tangible", "reliability", "responsiveness", "assurance" and "empathy"; "Service Expectations" and "Service Perceptions" are Independent variables whereas the dependent variable is "Public satisfaction on public toilet services".

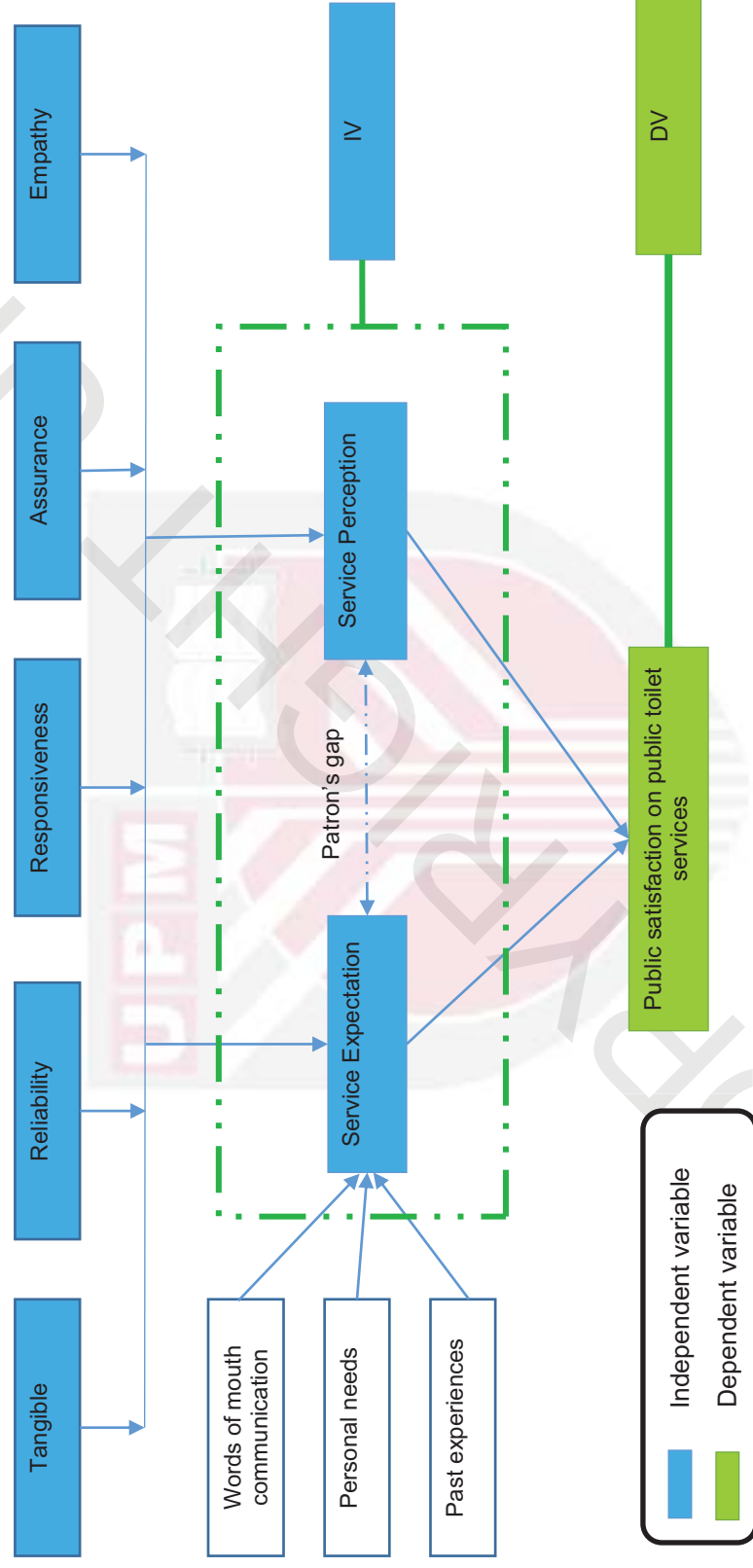


Figure 1.1: Conceptual Framework

1.7 Definition of Term

1.7.1 SERVQUAL model

In order to measure service quality, Parasuraman et al. (1985) proposed a comprehensive model comprising ten dimensions of service quality i.e. (1) tangibles, (2) reliability, (3) responsiveness, (4) understanding the customers, (5) access, (6) communication, (7) credibility, (8) security, (9) competence and (10) courtesy. Same model was latter simplified and named as SERVQUAL by Parasuraman et al. (1988) reducing it to five dimensions i.e. (1) tangibles, (2) reliability, (3) responsiveness, (4) assurance and (5) empathy. The SERVQUAL scale has been widely recognized by academicians, researchers and practitioners in various fields and different countries (Muhammad Butt and Cyril de Run, 2010, Farooq et al., 2016, Lee-Ross, 2008). SERVQUAL offers a comprehensive measurement scale with practical implications for customers' perceived service quality (Parasuraman et al., 1994, Farooq et al., 2018)

1.7.1.1 Conceptual definition

Service quality has been defined differently by different people and yet there are no consensus on what the actual definition is. According to Parasuraman et al. (1988), service quality is defined as the discrepancy between a customer's perception of a service and customer's expectation of the service provided. Later on, Parasuraman et al. (1988), developed the SERVQUAL model which is a multi-item scale to assess the customers' perceptions of service quality in the service and retail business. It consists of five dimensional constructs as follows (Parasuraman et al., 1988):

- a) Tangibles such the physical facilities, equipment, staff appearance.
- b) Reliability refers to the ability to perform service dependably and accurately
- c) Responsiveness refer to willingness to help and respond to the customers' needs
- d) Assurance refers to the ability of staff to inspire confidence and trust
- e) Empathy refers to the extent to which caring individualised service is given.

1.7.1.2 Operational definition

In this present study, the SERVQUAL five dimensions were used which are then subdivided into 26 statements. These statements directed to measure service quality with regards to public toilets facilities provided in Port Dickson.

1.7.2 Gap score (satisfaction gap)

1.7.2.1 Conceptual definition

The difference between customer's perceptions and customers' expectations is determined as satisfaction gap.

1.7.2.2 Operational definition

These scores are derived later on from the SERVQUAL questionnaires based on the public toilets facilities expectations and perceptions. The gap scores also important to measure the service quality provided by using the SERVQUAL model.

1.7.3 Satisfaction

1.7.3.1 Conceptual definition

Satisfaction refers to the satisfaction that has been defined as the cognitive or emotional response resulting from the consumption experience, or a comparison of benefits and costs to anticipated consequences. Jones and Suh (2000) postulated that satisfaction is cumulative based on the overall evaluation of service experience. Yi (1990) considered satisfaction as an attitude towards the service experienced by the customer (Jones and Suh, 2000, Yi, 1990).

1.7.3.2 Operational definition

Therefore, the satisfaction is derived from the questionnaire as overall satisfaction towards the public toilets facilities provided. Overall satisfaction is determined using the perception of the service by itself with regard to the public toilet facilities.

REFERENCES

- ADAMS, G. R. & SCHVANEVELDT, J. D. 1985. *Understanding research methods*, Longman Publishing Group.
- AKAMA, J. S. & KIETI, D. M. 2003. Measuring tourist satisfaction with Kenya's wildlife safari: a case study of Tsavo West National Park. *Tourism management*, 24, 73-81.
- AL JOHANI ABDULRAHMAN, A. 2016. *Knowledge, Awareness And Practice Of Needle Stick And Sharps Injuries Among Healthcare Service Providers In King Fahd Hospital Saudi Arabia*. Master of Science (Occupational Safety and Health), Universiti Putra Malaysia.
- ALI, F., KIM, W. G., LI, J. & JEON, H.-M. 2016. Make it delightful: Customers' experience, satisfaction and loyalty in Malaysian theme parks. *Journal of Destination Marketing & Management*.
- ALTUNEL, M. C. & ERKUT, B. 2015. Cultural tourism in Istanbul: The mediation effect of tourist experience and satisfaction on the relationship between involvement and recommendation intention. *Journal of Destination Marketing & Management*, 4, 213-221.
- ANAND, C. K. & APUL, D. S. 2014. Composting toilets as a sustainable alternative to urban sanitation—A review. *Waste management*, 34, 329-343.
- ANDERSON, E. W., FORNELL, C. & LEHMANN, D. R. 1994. Customer satisfaction, market share, and profitability: Findings from Sweden. *The Journal of marketing*, 53-66.
- ANDERSSON, K., DICKIN, S. & ROSEMARIN, A. 2016. Towards “Sustainable” Sanitation: Challenges and Opportunities in Urban Areas. *Sustainability*, 8, 1289.
- APERGIS, N. & TANG, C. F. 2013. Is the energy-led growth hypothesis valid? New evidence from a sample of 85 countries. *Energy Economics*, 38, 24-31.
- ASSAF, A. G. & TSIONAS, M. 2018. The estimation and decomposition of tourism productivity. *Tourism Management*, 65, 131-142.
- AUGSBURG, B. & RODRIGUEZ-LESMES, P. 2015. Sanitation and child health in India. Institute for Fiscal Studies.
- AZAM, M., MAHMUDULALAM, M. & HAFEEZ, M. H. 2018. Effect of tourism on environmental pollution: Further evidence from Malaysia, Singapore and Thailand. *Journal of Cleaner Production*.

- BAKER, D. A. & CROMPTON, J. L. 2000. Quality, satisfaction and behavioral intentions. *Annals of tourism research*, 27, 785-804.
- BECKER, S., BRYMAN, A. & FERGUSON, H. 2012. *Understanding research for social policy and social work: themes, methods and approaches*, Policy Press.
- BIGNE, J., MARTÍNEZ, C., MIQUEL, M. & ANDREU, L. 2003. SERVQUAL reliability and validity in travel agencies. *Annals of Tourism Research*, 30, 258-262.
- BITTNER, M. & HUBBERT, A. R. 1994. *Encounter Satisfaction Versus Overall Satisfaction Versus Quality: The Customer's Voice*, Thousand Oaks, California, USA, Sage.
- BLEICH, S. N., ÖZALTIN, E. & MURRAY, C. J. 2009. How does satisfaction with the health-care system relate to patient experience? *Bulletin of the World Health Organization*, 87, 271-278.
- BLENDON, R. J., SCHOEN, C., DESROCHES, C. M., OSBORN, R., SCOLES, K. L. & ZAPERT, K. 2002. Inequities in health care: a five-country survey. *Health Affairs*, 21, 182-191.
- BOHM, J. 2013. Relating patient satisfaction to insurance coverage: a Comparison of market based and Government Sponsored health care.
- BONETT, D. G. & WRIGHT, T. A. 2015. Cronbach's alpha reliability: Interval estimation, hypothesis testing, and sample size planning. *Journal of Organizational Behavior*, 36, 3-15.
- BROOKES, J. D. & CAREY, C. C. 2015. Ensure availability and sustainable management of water and sanitation for all. *UN Chronicle*, 51, 15-16.
- BROWN, T. J., CHURCHILL JR, G. A. & PETER, J. P. 1993. Research note: improving the measurement of service quality. *Journal of Retailing*, 69, 127.
- CARMAN, J. M. 1990. Consumer perceptions of service quality: An assessment of the SERVQUAL dimensions. *Journal of Retailing*.
- CHAN, J. K. L. & BAUM, T. 2007. Researching Consumer Satisfaction: An Extension of Herzberg's Motivator and Hygiene Factor Theory. *Journal of Travel & Tourism Marketing*, 23, 71-83.
- CHANG, C.-W. & TSENG, T.-H. 2013. Configural algorithms of patient satisfaction, participation in diagnostics, and treatment decisions' influences on hospital loyalty. *Journal of Services Marketing*, 27, 91-103.

- CHEN, C.-C., HUANG, W.-J. & PETRICK, J. F. 2016. Holiday recovery experiences, tourism satisfaction and life satisfaction–Is there a relationship? *Tourism Management*, 53, 140-147.
- CHEN, C.-F. 2008. Investigating structural relationships between service quality, perceived value, satisfaction, and behavioral intentions for air passengers: Evidence from Taiwan. *Transportation Research Part A: Policy and Practice*, 42, 709-717.
- CHEN, C.-F. & CHEN, F.-S. 2010. Experience quality, perceived value, satisfaction and behavioral intentions for heritage tourists. *Tourism management*, 31, 29-35.
- CHENG, S., LI, Z., UDDIN, S. M. N., MANG, H.-P., ZHOU, X., ZHANG, J., ZHENG, L. & ZHANG, L. 2017. Toilet revolution in China. *Journal of environmental management*.
- CHOO, H. & PETRICK, J. F. 2015. The importance of travel companionship and We-Intentions at tourism service encounters. *Journal of Quality Assurance in Hospitality & Tourism*, 16, 1-23.
- CNN TRAVEL, C. 2016. *Five incredible Malaysian islands* [Online]. New York, USA: CNN Travel. Available: <http://edition.cnn.com/2015/11/12/asia/5-best-malaysian-islands/index.html> [Accessed 19 July 2017 2017].
- CROMPTON, J. L. & LOVE, L. L. 1995. The predictive validity of alternative approaches to evaluating quality of a festival. *Journal of travel research*, 34, 11-24.
- CROMPTON, J. L. & MACKAY, K. J. 1989. Users' perceptions of the relative importance of service quality dimensions in selected public recreation programs. *Leisure Sciences*, 11, 367-375.
- CRONIN JR, J. J. & TAYLOR, S. A. 1992. Measuring service quality: a reexamination and extension. *The Journal of Marketing*, 56, 55-68.
- DANIEL, C. N. & LUKONG, P. 2010. Using the SERVQUAL Model to assess Service Quality and Customer Satisfaction.: An Empirical Study of Grocery Stores in Umeå.
- DECOSTER, J. 1998. *Overview of factor analysis* [Online]. Available: <http://www.stat-help.com/notes.html> [Accessed 19 May 2017].
- DEL BOSQUE, I. R. & SAN MARTÍN, H. 2008. Tourist satisfaction a cognitive-affective model. *Annals of tourism research*, 35, 551-573.
- DEPARTMENT OF STANDARDS MALAYSIA, D. 2007. Malaysian Standard (MS 1522:2007) Vitreous China Water Closet Pans – Specification (Second Revision). Kuala Lumpur, Malaysia: Standards Malaysia (SIRIM).

- DEVI JUWAHEER, T. 2011. Gender bias in hotel guests' perceptions of service quality: an empirical investigation of hotels in Mauritius. *E-review of Tourism Research*, 9.
- DITTMAR, H., LONG, K. & MEEK, R. 2004. Buying on the Internet: Gender differences in on-line and conventional buying motivations. *Sex roles*, 50, 423-444.
- DUBÉ, L. & MORGAN, M. S. 1998. Capturing the dynamics of in-process consumption emotions and satisfaction in extended service transactions. *International Journal of Research in Marketing*, 15, 309-320.
- DUSI, D. D., ZAHARI, M. S. & AKBAR, S. N. 2016. Malaysia, crises and tourist travel motivation. *Tourism, Leisure and Global Change*, 3, 179-188.
- EDVARDSSON, B., THOMASSON, B. & OVRETVEIT, J. 1994. *Quality of service-Making it really work*, McGraw-Hill.
- ENGLEHARDT, J. D., WU, T., BLOETSCHER, F., DENG, Y., DU PISANI, P., EILERT, S., ELMIR, S., GUO, T., JACANGELO, J. & LECHEVALLIER, M. 2017. *Water Research & Technology*.
- ETIKAN, I., MUSA, S. A. & ALKASSIM, R. S. 2016. Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5, 1-4.
- FAROOQ, M. S., JAAFAR, N., AYUPP, K., SALAM, M., MUGHAL, Y. H., AZAM, F. & SAJID, A. 2016. Impact of entrepreneurial skills and family occupation on entrepreneurial intentions. *Science International-Lahore*, 28, 3145-3148.
- FAROOQ, M. S., SALAM, M., FAYOLLE, A., JAAFAR, N. & AYUPP, K. 2018. Impact of service quality on customer satisfaction in Malaysia airlines: A PLS-SEM approach. *Journal of Air Transport Management*, 67, 169-180.
- FICK, G. R. & BRENT RITCHIE, J. 1991. Measuring service quality in the travel and tourism industry. *Journal of Travel Research*, 30, 2-9.
- FLICK, U. 2015. *Introducing research methodology: A beginner's guide to doing a research project*, Sage.
- FOOTMAN, K., ROBERTS, B., MILLS, A., RICHARDSON, E. & MCKEE, M. 2013. Public satisfaction as a measure of health system performance: a study of nine countries in the former Soviet Union. *Health Policy*, 112, 62-69.

- FREITAS, A. L. P. & COSTA, H. G. 2012. Development and testing of a multi-criteria approach to the assessment of service quality: an empirical study in Brazil. *International Journal of Management*, 29, 633.
- GALLARZA, M. G. & SAURA, I. G. 2006. Value dimensions, perceived value, satisfaction and loyalty: an investigation of university students' travel behaviour. *Tourism management*, 27, 437-452.
- GHADERI, Z., SOM, A. P. M. & HENDERSON, J. C. 2012. Tourism crises and island destinations: Experiences in Penang, Malaysia. *Tourism Management Perspectives*, 2, 79-84.
- GOH, L. 2013. Time to clean up our act in the toilet *The Star*, 24 November 2013.
- GRÖNROOS, C. 1993. Toward a third phase in service quality research: challenges and future directions. *Advances in services Marketing and Management*, 2, 49-64.
- GURSOY, D., MCCLEARY, K. W. & LEPSITO, L. R. 2003. Segmenting dissatisfied restaurant customers based on their complaining response styles. *Journal of foodservice business research*, 6, 25-44.
- GURSOY, D., MCCLEARY, K. W. & LEPSITO, L. R. 2007. Propensity to complain: Effects of personality and behavioral factors. *Journal of Hospitality & Tourism Research*, 31, 358-386.
- HALL, J. A. & DORNAN, M. C. 1990. Patient sociodemographic characteristics as predictors of satisfaction with medical care: a meta-analysis. *Social science & medicine*, 30, 811-818.
- HAN, X., KWORTNIK JR, R. J. & WANG, C. 2008. Service loyalty: An integrative model and examination across service contexts. *Journal of Service Research*, 11, 22-42.
- HART, M. 1996. Incorporating outpatient perceptions into definitions of quality. *Journal of Advanced Nursing*, 24, 1234-1240.
- HASSAN, H. 2014. The representation of Malaysian cultures in tourism brochures. *Procedia-Social and Behavioral Sciences*, 118, 140-151.
- HEUNG, V. C. & CHENG, E. 2000. Assessing tourists' satisfaction with shopping in the Hong Kong special administrative region of China. *Journal of Travel Research*, 38, 396-404.
- HODGE, D. R. & WOLOSIN, R. J. 2012. Addressing older adults' spiritual needs in health care settings: an analysis of inpatient hospital satisfaction data. *Journal of Social Service Research*, 38, 187-198.

- HOFMAN, A., BRUSSELLE, G. G., MURAD, S. D., VAN DUIJN, C. M., FRANCO, O. H., GOEDEGEBOURE, A., IKRAM, M. A., KLAVER, C. C., NIJSTEN, T. E. & PEETERS, R. P. 2015. The Rotterdam Study: 2016 objectives and design update. *European journal of epidemiology*, 30, 661-708.
- HOOGSTEN, K. J. 2001. *Water, the Taste of Life*, Assen, Netherlands. .
- HU, M., FAN, B., WANG, H., QU, B. & ZHU, S. 2016. Constructing the ecological sanitation: a review on technology and methods. *Journal of Cleaner Production*, 125, 1-21.
- HUI, T. K., WAN, D. & HO, A. 2007. Tourists' satisfaction, recommendation and revisiting Singapore. *Tourism management*, 28, 965-975.
- HUUHTANEN, S. & LAUKKANEN, A. 2006. A guide to sanitation and hygiene for those working in developing countries. *Global Dry Toilet Finland*. Rejkavik, Finland: Tampere Polytechnic, University of Applied Sciences
- IGNACIO, J. J., ALVIN MALENAB, R., PAUSTA, C. M., BELTRAN, A., BELO, L., TANHUECO, R. M., ERA, M., EUSEBIO, R. C., PROMENTILLA, M. A. & ORBECIDO, A. 2018. Perceptions and Attitudes Toward Eco-Toilet Systems in Rural Areas: A Case Study in the Philippines. *Sustainability*, 10, 521.
- ISIK, O., TENGILIMOGLU, D. & AKBOLAT, M. 2011. Measuring health care quality with the Servqual method: a comparison in public and private hospitals. *HealthMED*, 5, 1921-1930.
- ITC, I. T. C. 2016. *Negri Sembilan records 5.7m tourist arrivals last year* [Online]. Available: <http://www.itc.gov.my/itc-news/negri-sembilan-records-5-7m-tourist-arrivals-last-year/> [Accessed 17 March 2017].
- JAIN, S. K. & GUPTA, G. 2004. Measuring service quality: SERVQUAL vs. SERVPERF scales. *Vikalpa*, 29, 25-38.
- JOHN, J., YATIM, F. M. & MANI, S. A. 2011. Measuring service quality of public dental health care facilities in Kelantan, Malaysia. *Asia Pacific Journal of Public Health*, 23, 742-753.
- JONES, M. A. & SUH, J. 2000. Transaction-specific satisfaction and overall satisfaction: an empirical analysis. *Journal of Services Marketing*, 14, 147-159.
- KALAJA, R., MYSHKETA, R. & SCALERA, F. 2016. Service quality assessment in health care sector: the case of Durres public hospital. *Procedia-Social and Behavioral Sciences*, 235, 557-565.

- KARYDIS, A., KOMBOLI-KODOVAZENITI, M., HATZIGEORGIOU, D. & PANIS, V. 2001. Expectations and perceptions of Greek patients regarding the quality of dental health care. *International journal for quality in health care*, 13, 409-416.
- KOTLER, P. & KELLER, K. L. 2016. *Marketing Management*, New York, USA, Pearson.
- KOZAK, M. & RIMMINGTON, M. 2000. Tourist satisfaction with Mallorca, Spain, as an off-season holiday destination. *Journal of travel research*, 38, 260-269.
- KUMAR, S. & PHROMMATHED, P. 2005. *Research methodology*, Springer.
- KUO, Y.-F. 2003. A study on service quality of virtual community websites. *Total Quality Management & Business Excellence*, 14, 461-473.
- KUUDER, C.-J. W., BAGSON, E. & AALANGDONG, O. I. 2013. Assessment of Visitor Satisfaction in Mole National Park, Ghana.
- LADHARI, R. 2009. A review of twenty years of SERVQUAL research. *International journal of quality and service sciences*, 1, 172-198.
- LAHAP, J., O'MAHONY, B. & DALRYMPLE, J. 2016. The Importance of Communication in Improving Service Delivery and Service Quality in the Malaysian Hotel Industry. *Procedia-Social and Behavioral Sciences*, 224, 213-220.
- LAHTI, S., TUUTTI, H., HAUSEN, H. & KAARIANEN, R. 1996. Patients' expectations of an ideal dentist and their views concerning the dentist they visited: do the views conform to the expectations and what determines how well they conform? *Community dentistry and oral epidemiology*, 24, 240-244.
- LAI, Y.-H. R., CHU, J.-Y. & PETRICK, J. F. 2016. Examining the relationships between perceived value, service quality, satisfaction, and willingness to revisit a theme park. *Asia Pacific Journal of Tourism Research*, 22, 465-479.
- LAROCHE, M., KALAMAS, M., CHEIKHROUHOU, S. & CEZARD, A. 2004. An assessment of the dimensionality of should and will service expectations. *Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration*, 21, 361-375.
- LE-KLÄHN, D.-T. & EDWARDS, D. 2014. Conference Report: The Best Education Network Think Tank XIII: Engaging Communities in Sustainable Tourism Development, Taylors University, Kuala Lumpur, Malaysia 2013. *Journal of Hospitality, Leisure, Sport & Tourism Education*, 14, 1-5.

- LEE-ROSS, D. 2008. An exploratory study of the contextual stability of SERVQUAL amongst three retail clusters in far North Queensland. *Journal of Place Management and Development*, 1, 46-61.
- LEE, H., LEE, Y. & YOO, D. 2000. The determinants of perceived service quality and its relationship with satisfaction. *Journal of services marketing*, 14, 217-231.
- LEE, J., GRAEFE, A. R. & BURNS, R. C. 2004. Service quality, satisfaction, and behavioral intention among forest visitors. *Journal of Travel & Tourism Marketing*, 17, 73-82.
- LEE, S. M., LEE, D. & KANG, C.-Y. 2012. The impact of high-performance work systems in the health-care industry: employee reactions, service quality, customer satisfaction, and customer loyalty. *The Service Industries Journal*, 32, 17-36.
- LEE, W.-H. & CHENG, C.-C. 2018. Less is more: A new insight for measuring service quality of green hotels. *International Journal of Hospitality Management*, 68, 32-40.
- LEMAN, A. M. 2003. *Indoor Air Quality of Public Toilets in Malacca*. Doctor of Philosophy (PhD), Universiti Putra Malaysia.
- LEMAN, A. M., ADAM, N., YUSOF, M. Z. & HUSAIN, A. 2005. Indoor air quality of public toilets in Malacca. *Indoor Air Supplement*, 15, 6-7.
- LEWIS, B. R. 1993. Service quality measurement. *Marketing Intelligence & Planning*, 11, 4-12.
- LI, J. J., WONG, I. A. & KIM, W. G. 2016. Effects of psychological contract breach on attitudes and performance: The moderating role of competitive climate. *International Journal of Hospitality Management*, 55, 1-10.
- LIM, P. C. & TANG, N. K. 2000. A study of patients' expectations and satisfaction in Singapore hospitals. *International journal of health care quality assurance*, 13, 290-299.
- LIN, C. 2008. A study on the Service Quality, Customer Perceived Values, Satisfaction and Marketing Intentions of Golf Courses in the Central Region. *Journal of Management Practices and Principles*, 2, 196-214.
- LOH, D. 2014. Yearning for a clean toilet. *Sin Chew Jit Poh*, 25 November 2014.
- MACKEY, A. & GASS, S. M. 2015. *Second language research: Methodology and design*, Routledge.

- MAKAREM, S. C. & AL-AMIN, M. 2014. Beyond the service process: The effects of organizational and market factors on customer perceptions of health care services. *Journal of Service Research*, 17, 399-414.
- MATTILA, A. S., GRANDEY, A. A. & FISK, G. M. 2003. The interplay of gender and affective tone in service encounter satisfaction. *Journal of Service Research*, 6, 136-143.
- MEESALA, A. & PAUL, J. 2018. Service quality, consumer satisfaction and loyalty in hospitals: Thinking for the future. *Journal of Retailing and Consumer Services*, 40, 261-269.
- MEYERS-LEVY, J. & STERNTHAL, B. 1991. Gender differences in the use of message cues and judgments. *Journal of marketing research*, 84-96.
- MEYERS, L. S., GAMST, G. & GUARINO, A. J. 2016. *Applied multivariate research: Design and interpretation*, Sage publications.
- MISSINNE, S., MEULEMAN, B. & BRACKE, P. 2013. The popular legitimacy of European healthcare systems: a multilevel analysis of 24 countries. *Journal of European Social Policy*, 23, 231-247.
- MOKHLIS, S. 2012. The influence of service quality on satisfaction: a gender comparison. *Public administration research*, 1, 103.
- MUHAMMAD BUTT, M. & CYRIL DE RUN, E. 2010. Private healthcare quality: applying a SERVQUAL model. *International journal of health care quality assurance*, 23, 658-673.
- MWIYA, S. 2004. An Overview of Semi-Quantitative, Qualitative and Knowledge-Based System Methodologies Relevant to Solid Waste Disposal Site Design in Arid and Semiarid Environments. *Communications of the Geological Survey of Namibia*, 13, 1-8.
- NADKARNI, M. 2004. The meaning of sanitation: An ecosystem approach. Paris. Paris.
- NEAL, J. D. & GURSOY, D. 2008. A multifaceted analysis of tourism satisfaction. *Journal of Travel Research*, 47, 53-62.
- NG, S. I., CHIA, K. W., HO, J. A. & RAMACHANDRAN, S. 2017. Seeking tourism sustainability—A case study of Tioman Island, Malaysia. *Tourism Management*, 58, 101-107.
- NUR IMANI, A. 2016. *The cleanliness of Malaysian public toilets* [Online]. Kuala Lumpur, Malaysia. Available: <https://www.malaysiakini.com/letters/362942> [Accessed 19 September 2017].

- O'ROURKE, N., PSYCH, R. & HATCHER, L. 2013. *A step-by-step approach to using SAS for factor analysis and structural equation modeling*, Sas Institute.
- OH, H. & PARKS, S. C. 1997. Customer satisfaction and service quality: a critical review of the literature and research implications for the hospitality industry. *Hospitality Research Journal*, 20, 35-64.
- OLIVER, R. L. 1993a. Cognitive, affective, and attribute bases of the satisfaction response. *Journal of consumer research*, 20, 418-430.
- OLIVER, R. L. 1993b. A Conceptual Model of Service Quality and Service Satisfaction: Comparative Goals, Different Concepts. *Advances in service marketing and management*, 2, 65-85.
- PARASURAMAN, A., ZEITHAML, V. A. & BERRY, L. L. 1985. A conceptual model of service quality and its implications for future research. *the Journal of Marketing*, 41-50.
- PARASURAMAN, A., ZEITHAML, V. A. & BERRY, L. L. 1988. Servqual: A multiple-item scale for measuring consumer perc. *Journal of retailing*, 64, 12.
- PARASURAMAN, A., ZEITHAML, V. A. & BERRY, L. L. 1994. Reassessment of expectations as a comparison standard in measuring service quality: implications for further research. *the Journal of Marketing*, 111-124.
- PARASURAMAN, A., ZEITHAML, V. A. & MALHOTRA, A. 2005. ES-QUAL: A multiple-item scale for assessing electronic service quality. *Journal of service research*, 7, 213-233.
- PIHA, S. & RÄIKÖNEN, J. 2017. When nature calls: The role of customer toilets in retail stores. *Journal of Retailing and Consumer Services*, 36, 33-38.
- PIZAM, A., NEUMANN, Y. & REICHEL, A. 1978. Dimensions of tourist satisfaction with a destination area. *Annals of tourism Research*, 5, 314-322.
- PRADELA, A. 2015. Quality of Graduates' Preparation for Labour Market—A ServQual Analysis. *Procedia-Social and Behavioral Sciences*, 174, 1671-1677.
- PRAVEENA, S. M. & ARIS, A. Z. 2013. A baseline study of tropical coastal water quality in Port Dickson, Strait of Malacca, Malaysia. *Marine pollution bulletin*, 67, 196-199.
- PRAVEENA, S. M., CHEN, K. S. & ISMAIL, S. N. S. 2013. Indicators of microbial beach water quality: preliminary findings from Teluk Kemang beach, Port Dickson (Malaysia). *Marine pollution bulletin*, 76, 417-419.

- PRAVEENA, S. M., SHAMIRA, S. S., ISMAIL, S. N. S. & ARIS, A. Z. 2016. Fecal indicator bacteria in tropical beach sand: Baseline findings from Port Dickson coastline, Strait of Malacca (Malaysia). *Marine pollution bulletin*, 110, 609-612.
- PURCĂREA, V. L., GHEORGHE, I. R. & PETRESCU, C. M. 2013. The assessment of perceived service quality of public health care services in Romania using the SERVQUAL scale. *Procedia Economics and Finance*, 6, 573-585.
- RAJU, P. & LONIAL, S. C. 2001. The impact of quality context and market orientation on organizational performance in a service environment. *Journal of Service Research*, 4, 140-154.
- RAMSEOOK-MUNHURRUN, P., NAIDOO, P. & LUKEA-BHIWAJEE, S. D. 2010. Measuring service quality: perception of employees. *Global Journal of Business Research*, 4, 47-58.
- RASHID, M. & PANDIT, D. 2017a. Determination of appropriate service quality attributes for household toilets in rural settlements of India based on user perception. *Environment, Development and Sustainability*, 19, 1381-1406.
- RASHID, M. & PANDIT, D. 2017b. Service quality of household toilets in rural settlements of India: an assessment from the users' perspective. *Journal of Water Sanitation and Hygiene for Development*, 7, 589-600.
- SANTOS, J. R. A. 1999. Cronbach's alpha: A tool for assessing the reliability of scales. *Journal of extension*, 37, 1-5.
- SARAVANAN, R. & RAO, K. 2007. Measurement of service quality from the customer's perspective—an empirical study. *Total Quality Management and Business Excellence*, 18, 435-449.
- SAUL, C. J. & GEBAUER, H. 2018. Digital Transformation as an Enabler for Advanced Services in the Sanitation Sector. *Sustainability*, 10, 752.
- SAYAREH, J., IRANSHAHI, S. & GOLFAKHRABADI, N. 2016. Service Quality Evaluation and Ranking of Container Terminal Operators. *The Asian Journal of Shipping and Logistics*, 32, 203-212.
- SHMUELI, A. 2003. Israelis evaluate their health care system before and after the introduction of the national health insurance law. *Health Policy*, 63, 279-287.
- SIU, K. W. M. & WONG, M. 2013. Promotion of a healthy public living environment: participatory design of public toilets with visually impaired persons. *Public health*, 127, 629-636.

- SIVASANKAR, S. 2016. *Design and Fabrication of Motorcycle Child Safety Backrest*. Doctor of Philosophy (PhD), Universiti Putra Malaysia.
- SIVASANKAR, S., KARMEGAM, K., BAHRI, M. S., NAEINI, H. S. & KULANTHAYAN, S. 2014. Safety system for child pillion riders of underbone motorcycles in Malaysia. *Traffic injury prevention*, 15, 564-571.
- SRICHAROENPRAMONG, S. 2017. Service quality improvement of ground staff at Don Mueang International Airport. *Kasetsart Journal of Social Sciences*, 39, 15-21.
- SUEN, L.-J. W., HUANG, H.-M. & LEE, H.-H. 2014. A comparison of convenience sampling and purposive sampling. *Hu Li Za Zhi*, 61, 105.
- TAN, P. K., MOHD SURADI, N. R. & SALUDIN, M. N. The impact of complaint management and service quality on organizational image: A case study at the Malaysian public university library. AIP Conference Proceedings, 2013. AIP, 1447-1453.
- TANG, C. F. & ABOSEDRA, S. 2014. The impacts of tourism, energy consumption and political instability on economic growth in the MENA countries. *Energy Policy*, 68, 458-464.
- TANG, C. F. & TAN, E. C. 2013. How stable is the tourism-led growth hypothesis in Malaysia? Evidence from disaggregated tourism markets. *Tourism Management*, 37, 52-57.
- TANG, C. F. & TAN, E. C. 2015. Does tourism effectively stimulate Malaysia's economic growth? *Tourism management*, 46, 158-163.
- TAVAKOL, M. & DENNICK, R. 2011. Making sense of Cronbach's alpha. *International journal of medical education*, 2, 53.
- TAYLOR, S. J., BOGDAN, R. & DEVAULT, M. 2015. *Introduction to qualitative research methods: A guidebook and resource*, John Wiley & Sons.
- TAZILAN, A. S. M., IBRAHIM, N. L. N., DARUS, Z. M. & USMAN, I. M. Malaysia Ecology Sustainable Toilet [MEST]: New Design Paradigm For Green & Zero Energy Public Toilets. International Conference On Construction Industry, 2006.
- TOBIAS, R., O'KEEFE, M., KÜNZLE, R., GEBAUER, H., GRÜNDL, H., MORGENROTH, E., PRONK, W. & LARSEN, T. A. 2017. Early testing of new sanitation technology for urban slums: The case of the Blue Diversion Toilet. *Science of the Total Environment*, 576, 264-272.
- TRIBE, J. & SNAITH, T. 1998. From SERVQUAL to HOLSAT: holiday satisfaction in Varadero, Cuba. *Tourism management*, 19, 25-34.

- UDO, G. J., BAGCHI, K. K. & KIRS, P. J. 2011. Using SERVQUAL to assess the quality of e-learning experience. *Computers in Human Behavior*, 27, 1272-1283.
- UN, U. N. 2015. The millennium development goals report. New York, USA: UN.
- UN WATER, U. N. W. 2006. Gender, water and sanitation: A policy brief. *UN, New York*.
- UN WATER, U. N. W. 2014. International decade for action, "Water for Life", 2005–2015.
- VEERA PANDIYAN, M. 2015. We need a toilet revolution *The Star*, 16 December 2015.
- VOGT, C. A. & FESENMAIER, D. R. 1998. Expanding the functional information search model. *Annals of Tourism Research*, 25, 551-578.
- WATKINS, K. 2006. Human development report 2006: beyond scarcity: power, poverty and the global water crisis. *Human development report 2006: beyond scarcity: power, poverty and the global water crisis*. United Nations Development Program (UNDP).
- WENDT, C., KOHL, J., MISCHKE, M. & PFEIFER, M. 2009. How do Europeans perceive their healthcare system? Patterns of satisfaction and preference for state involvement in the field of healthcare. *European Sociological Review*, 26, 177-192.
- WHIPPLE, T. W. & THACH, S. V. 1988. Group tour management: Does good service produce satisfied customers? *Journal of Travel Research*, 27, 16-21.
- WHO & UNICEF, W. H. O. A. U. N. C. S. F. 2014. *Progress on drinking water and sanitation: 2014 Update*, World Health Organization.
- WHO, W. H. O. 1996. The World health report 1996: fighting disease, fostering development: executive summary. Geneva, Switzerland: World Health Organization.
- WHO, W. H. O. 2004. Sanitation and hygiene links to health: facts and figures. Geneva, Switzerland: World Health Organization.
- WICKS, A. M. & ROETHLEIN, C. J. 2009. A satisfaction-based definition of quality. *The Journal of Business and Economic Studies*, 15, 82.
- WILSON, A., ZEITHAML, V. A., BITNER, M. J. & GREMLER, D. D. 2012. *Services marketing: Integrating customer focus across the firm*, McGraw Hill.

- WONGRUKMIT, P. & THAWESAENGSKULTHAI, N. 2014. Hospital service quality preferences among culture diversity. *Total Quality Management & Business Excellence*, 25, 908-922.
- WORLD TRAVEL & TOURISM, W. T. T. 2012. World Travel & Tourism Report. Switzerland: Tourism Economic Research.
- WTTC. 2016. *Travel & Tourism Economic Impact 2016 Singapore* [Online]. Singapore. Available: <http://www.wttc.org/-/media/files/reports/economic-impact-research/countries2016/-singapore2016.pdf> [Accessed 10 August 2017].
- YARIMOGLU, E. K. 2015. A review of service and e-service quality measurements: Previous literature and extension. *Journal of Economic and Social Studies*, 5, 169.
- YI, Y. 1990. A critical review of consumer satisfaction. *Review of marketing*, 4, 68-123.
- YOUSAPRONPAIBOON, K. 2014. SERVQUAL: Measuring higher education service quality in Thailand. *Procedia-Social and Behavioral Sciences*, 116, 1088-1095.
- YUKSEL, A. & YUKSEL, F. 2001. Measurement and management issues in customer satisfaction research: Review, critique and research agenda: Part one. *Journal of Travel & Tourism Marketing*, 10, 47-80.
- ZAREI, A., ARAB, M., FROUSHANI, A. R., RASHIDIAN, A. & TABATABAEI, S. M. G. 2012. Service quality of private hospitals: The Iranian Patients' perspective. *BMC health services research*, 12, 31.
- ZEITHAML, V., BITNER, M. & GREMLER, D. 2006. *Services Marketing* New York, USA, McGraw Hill.