



SUPERVISOR'S APPROVAL

I / We * hereby declare that have read this works and in my / our * this works is sufficient in terms of scope and quality for the submission Bachelor of Technopreneurship

Signature : 
Name of Main Supervisor : Dr. Sembot Imam W
Date : 21/6 2013

Signature : 
Name of Panel Supervisor : NURUL ZAIRAH NIZAM
Date : 21/6/2013

**delete unrelated*

QUICK RESPONSE CODE TECHNOLOGY FOR MARKETING PURPOSES:
IMPROVING TRACKING CODE FROM BARCODE

CHOY MIN YEE

This report submitted in partial fulfillment for Bachelor of Technopreneurship

Faculty of Technology Management and Technopreneurship (FPTT),
Universiti Teknikal Malaysia Melaka

2013

DECLARATION

“This report is a product of my own work except the citation for each of which I have mentioned the sources.”

Signature



Name

.....
CHYOY MIN YEE

Date

.....
2 - 6 - 2013
.....

ACKNOWLEDGEMENT

I would like to take this opportunity to express my heartiest gratitude to everyone who is involved directly or indirectly in contributing to this research. I am grateful to all the supports given to me.

This particular research would never be able to accomplish without the support of my beloved supervisor, **Dr Sentot Imam Wahjono** who is extremely knowledgeable and he has spent his valuable time giving advice, shared his experience with me and assisted me in every aspect. I am truly grateful for having such a wonderful supervisor.

Lastly, I would like to thank my family who always supports me and also my friends for their assistance to enable the completion of this research.

ABSTRACT

The aim of this research is to analysis objective which is the factor of benefit QR code with marketing purposes, benefit QR code simultaneous with marketing purposes, and the most influence of factor benefit QR code in marketing purposes. Hence, the researcher will be use of exploratory research to design the quantitative questionnaire. The nine of the independent variable will be test validity variable in the pilot. The researcher wills random select 20 of respondent student for answering pilot test. From the analysis SPSS result, it shows that the three factors have relation in marketing purposes. It is consist of physical benefit of QR code, capable store data capability of QR code and capable read any direction in 360° is validity in the pilot test. Hence, the three factor independent variable will be proceed of the research topic with distributing questionnaire. It will be using kwiksurvey tool to distribute questionnaire and collect back from 367 respondent of 7 faculty UTeM students. From the analysis SPSS results, it was found that the objective research was achieve when hypothesis test of three factor of benefit QR code have shown relationship in marketing purposes; also the benefit QR code simultaneous significant have shown relationship in marketing purposes in the hypothesis. From the result of benefit QR code simultaneous with marketing purposes, it can be found the factor of store data capability most influence in the marketing purposes with compare two other factor. Hence for this research, the three objective was achieved. In the end of research, it will be discuss base on this three factor and suggestion idea for future research such determine customer behavior of using QR code

Keywords: QR code, Marketing Purposes, Store Data Capability

ABSTRAK

Tujuan penyelidikan ini adalah untuk analisis faktor manfaat kod QR dengan tujuan pemasaran; manfaat kod QR serentak dengan tujuan pemasaran, dan pengaruh yang paling faktor manfaat kod QR dalam tujuan pemasaran. Oleh itu, penyelidik akan menggunakan penyelidikan penerokaan reka bentuk soal selidik kuantitatif dalam kajian ini. Sembilan pembolehubah bebas akan menjadi ujian kesahihan berubah-ubah dalam perintis. The wasiat penyelidik akan secara rawak memilih 20 pelajar responden untuk menjawab ujian perintis. Dari analisis SPSS hasil, ia menunjukkan bahawa tiga faktor yang mempunyai hubungan dalam tujuan pemasaran. Ia adalah terdiri daripada manfaat fizikal kod QR, keupayaan menyimpan data kod QR dan mampu membaca apa-apa arah dalam 360 ° adalah sah dalam ujian perintis. Oleh itu, ketiga-tiga faktor pembolehubah bebas akan meneruskan dalam penyelidikan Ia akan menggunakan alat kwiksurvey untuk mengedarkan soal selidik dan mengumpul kembali dari 367 responden daripada 7 fakulti pelajar UTeM. Dari analisis SPSS keputusan, didapati bahawa kajian objektif telah dicapai apabila ujian hipotesis tiga faktor kod QR manfaat telah menunjukkan hubungan dalam tujuan pemasaran; juga hipotesis menunjukkan hubungan kod QR manfaat serentak penting dalam tujuan pemasaran. Dari hasil manfaat kod QR serentak dengan tujuan pemasaran, ia boleh didapati faktor keupayaan simpan data adalah pengaruh yang paling besar dalam tujuan pemasaran dengan membandingkan dua faktor lain. Oleh itu kajian ini, objektif tiga telah dicapai. Di akhir kajian, ia akan membincangkan asas mengenai perkara ini faktor tiga dan idea cadangan untuk kajian masa depan seperti menentukan tingkah laku pelanggan menggunakan kod QR

Kata Kunci: Kod QR, Tujuan Pemasaran, Kedai Keupayaan Data

TABLE OF CONTENT

CHAPTER	TOPIC	PAGE
	DECLARATION	ii
	ACKNOWLEDGEMENT	iii
	ABSTRACT	iv
	<i>ABSTRAK</i>	v
	TABLE OF CONTENT	vi
	LIST OF TABLES	ix
	LIST OF FIGURES	x
	LIST OF ABBREVIATION	xiii
	LIST OF APPENDIX	xiv
1	INTRODUCTION	
	1.1 Background of the Study	1
	1.2 Statement of the Problem	2
	1.3 Objectives	3
	1.4 Scope of the Project	3
	1.5 Importance of the Project	4

CHAPTER	TOPIC	PAGE
2	LITERATURE REVIEW	
	2.1 Tracking Code Theory	6
	2.2 Barcode Theory	9
	2.3 Quick Response Code (QR Code) Theory	9
	2.4 Access of QR Code	12
	2.5 Marketing Purpose	13
	2.6 Theoretical Framework	16
	2.6.1 Benefit of QR Code	17
	2.6.2 Marketing Purposes	23
	2.7 Hypothesis of the Study	30
3	RESEARCH METHOD	
	3.1 Research Design	35
	3.2 Method of Data Collection	37
	3.3 Population and Sampling Procedures	39
	3.3.1 Population	39
	3.8.2 Sample	40
	3.4 Location of Research	42
	3.5 Validity and Reliability Test	44
	3.5.1 Validity for Pilot Test	45
	3.5.2 Reliability for Research	47

CHAPTER	TOPIC	PAGE
4	FINDING AND DISCUSSION	
	4.1 Respondent Characteristic	48
	4.1.1 Demographic Profile Analysis	48
	4.1.2 Descriptive Statistic for Variable	57
	4.2 Inferential Statistics for Analysis	58
	4.3.1 Pearson Correlation Among Variable	58
	4.3 Testing Hypothesis with Simple Regression	59
	4.4 Testing Hypothesis with Multiple Linear Regression	65
	4.5 Discussion	67
5	CONCLUSION AND RECOMMENDATION	
	5.1 Conclusion	70
	5.2 Recommendation	71
	BIBLIOGRAPHY	
	APPENDIX	

LIST OF TABLES

NO.	TITLE	PAGE
3.1	Sample Random Selection of Faculty Student	41
3.2	Critical Value of Correlation X Factor and Y Factor	45
3.3	Case Processing Summary	47
3.4	Reliability of Research (367 Respondent)	47
4.1	Descriptive Statistics For X Factor And Y Factor	57
4.2	Correlation Between X Factor And Y Factor	58
4.3	Model Summary For Hypothesis 1.1	59
4.4	ANOVA For Hypothesis 1.1	59
4.5	Coefficients For Hypothesis 1.1	60
4.6	Model Summary For Hypothesis 1.2	61
4.7	ANOVA For Hypothesis 1.2	61
4.8	Coefficients For Hypothesis 1.2	62
4.9	Model Summary For Hypothesis 1.5	63
4.10	ANOVA For Hypothesis 1.5	63
4.11	Coefficients For Hypothesis 1.5	64
4.12	Model Summary For Hypothesis 2.1	65
4.13	ANOVA For Hypothesis 2.1	65
4.14	Coefficient For Hypothesis 2.1	66

LIST OF FIGURES

NO.	TITLE	PAGE
1.1.	Sample of Quick Response Code (QR Code) Tag In Product	1
2.1	A QR Code Example	7
2.2	A Barcode Example	7
2.3	Contain Data Between QR Code and Barcode	8
2.4	Contain of QR Code	10
2.5	Theoretical Framework Design	16
2.6	High Capacity Encoding of Data	17
2.7	QR Code Print in Smaller Size	19
2.8	Readable from Any Direction in 360 ^o	19
2.9	Dirty and Damage of the QR Code	20
2.10	Structure Appended Feature	21
2.11	QR Code in Mc Donald's Food Bag	27
3.1	Theoretical Framework of QR Code with Marketing Purpose	33
3.2	Image of Online KwikSurvey	38
3.3	Total Number of Utem Student in Semester 1 of 2012/2013	39
3.4	Image of Determining Sample Size from Population	40
3.5	Map of Main Campus	42
3.6	Map of Industrial Campus	43
3.7	Map of City Campus	43
4.1	Gender of UTeM Student	48
4.2	Faculty of UTeM Student	49
4.3	Respondent Seen QR Code Previously	50
4.4	Area Respondent Seen the QR Code	51

NO.	TITLE	PAGE
4.5	Respondent Used to Scan QR Code	52
4.6	Able of Respondent Differentiate Between Barcode and QR Code	53
4.7	Contain of QR Code	54
4.8	Respondent Know the QR Code Scan by Mobile Phone	55
4.9	Like the Idea of QR Code	56

LIST OF ABBREVIATION

CD	=	Change Directory
DVD	=	Disc or Digital Video Disc
EAN-13	=	European Article Number of 13 Digits
FKE	=	Faculty Of Electrical Engineering
FKEKK	=	Faculty Of Electronics And Computer Engineering
FKM	=	Faculty Of Mechanical Engineering
FTMK	=	Faculty Of Information And Communication Technology
FKP	=	Faculty Of Manufacturing Information
FPTT	=	Faculty Of Technology Management And Technopreneurship
FTK	=	Faculty Of Engineering Technology
ISBM	=	International School of Business Management
PDA	=	Personal Digital Assistant
POS	=	Point of Sale
QR	=	Quick Response Code
SMS	=	Short Message Service
TV	=	Television
UPC	=	Universal Product Code
URL	=	Uniform Resource Locator
UTeM	=	University Teknikal Malaysia Melaka
VLP	=	Virtual Learning Partner
WLAN	=	Wireless Local Area Network
1D	=	One Dimension
2D	=	Two Dimension

LIST OF APPENDIX

NO.	TITLE	Page
1	Questionnaire	
2	SPSS Data	

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

QR Code is a form of 2D barcode. It was developed by Denso-Wave, a Japanese automatic data capture equipment company (Denso, 2009), in 1994. “QR” stands for “Quick Response.” It is readable by moderately equipped mobile phones with cameras and QR scanner (Law, C. and So, S, 2010). Refer with Figure 1.1, it shows the image of QR code which tag by the product.



Source: Image QR code From JA.TXT

Figure 1.1: Sample of Quick Response Code (QR code) Tag in Product

In Malaysia, we can notice the QR Code was starting propose use in term of business statement. For example, the Air Asia Company provide simple apps such as QR code for traveller which code link the webpage of Malaysia Air Asia to check in, book flight, and getting new flight promotion. Also company of Golden Screen Cinema (GSC) follow technology trend which tag up the QR code in facilities, website, building and so on. It was bringing easy for consumer with scan of the code to choose the movie what they are like and booking the ticket in few minute. It bring convenient and save time to them with skip step for queue and buy ticket

Compare function of barcode with QR code, the QR code is offers more advantage than linear barcode. For example the QR code can capacity store more data than barcode, the QR code able read anytime, anywhere with the smartphone scan of it, save cost and so on. With the benefit of the QR codes, it is quick response with simplify access to visit website, see text and images, see emails and messages, dial telephone number and so on(Jones, 2012.). Hence with this benefit of QR code, the researcher will be research in the three objectives which to determine factor of benefit QR code and the benefit of QR code simultaneous relationship in the marketing purposes. And determine which of the factor of benefit QR code most influence of marketing purposes. Thus, the researches will be through this research with analysis more detail the benefit of QR code in marketing statement.

1.2 Statement of the Problem

- i) What factor of benefit QR code relationship in marketing purposes?
- ii) Is it benefit of QR code relationship simultaneous in marketing purposes?
- iii) Which is the most important of benefit QR code relationship in marketing purposes?

1.3 Objectives

There are two of the objectives to be achieved through this research. As it is clearly stated in the problem statement, this research aims to:

- i) To study relationship between factor of QR code with marketing field purposes
- ii) To study relationship between benefit QR code simultaneous with marketing purposes
- iii) To study most important of QR code in marketing purposes

1.4 Scope of the Project

The QR code it becomes popular and growing faster used in the marketing. It is supposing target customer as a respondent to answering questionnaire. However in this research, the researcher will be scope of customer who are understand of QR code of this technology. Thus, the researcher will be choosing of student as appropriate respondent to answer questionnaire. If the researcher generates random select of customer who is notice of QR code purposes, the information obtain from questionnaire may become bias. It is because the not every one of the customer will be understand the QR code use for with the function of benefit code. Hence in the end, the research of objective will not achieve with research of benefit QR code.

Hence, the researcher will be choosing the student as a respondent to answer it. The researcher will be looking for educators who have background of knowledge of technology, technical IT, and so on. Thus, the research questionnaire will be given out to them to look out whether there are realise or not this kind of mobile technology in around us. With the ability of student easy adopt with the new technology through educate or undergo of assignment push with relate IT technology, the student as a

suitable respondent to analysis in this research whether there are conscious about the benefit QR code in marketing area.

Hence in this research, the Universiti Teknikal Malaysia Melaka (UTeM) student will be choosing as respondent to analyse. For information, the UTeM have 7 faculty which is faculty of electronics and computer engineering (FKEKK), faculty of electrical engineering (FKE), faculty of mechanical engineering (FKM), faculty of manufacturing information (FKP), faculty of information and communication technology(FTMK), faculty of technology management and technopreneurship (FPTT), and last is faculty of engineering technology (FTK).

1.5 Important of the Project

This research more focuses on the UTeM student where to test the student aware or not the QR code that have occur in the marketing field. Thus, through this research, the researcher can predict the student perspective about benefit of QR code in recently found use in marketing purposes.

For the academic site, this research QR code can be foundation knowledge to other people research. This research may be benefit for other researcher where the information widely spread and using in multi range. Therefore, the researcher can through the data information provide new idea, method, or innovation of QR code for the next research.

Besides that, the marketer can be referring back this research topic to strategic plan in marketing campaign. Therefore, the marketer needs to know behind the content of the QR code before embedded in the marketing strategic. Thus, this research can help marketer foresee the trend in the future.

CHAPTER 2

LITERATURE REVIEW

A literature review is a critical and in depth evaluation of previous research. It is a summary and synopsis of a particular area of research, allowing anybody reading the paper to establish why you are pursuing this particular research program. A good literature review expands upon the reasons behind selecting a particular research question. (Shuttleworth , 2009).

To study the case QR code, the researcher need read a lot of book and finding relevant of resources from internet before start doing pilot test in chapter 3. It will be help in chapter 3 with form of question design related with the theory information is done in chapter 2. Therefore, the researcher need collect the data as much as possible to build up concept and increase knowledge about QR code. With finding topic information that have a lot of relevant interest information will come out. However so, the researcher need to identify the resource it is relevant with the topic. If not so, the resource can be take part as references for construct this research or filter out from the selection resource. It is because some of the information have nearly related with the researcher topic and achieve the research objective. In the end, the data collection from the resources can be build out the theoretical framework with the relevant article.

2.1 Tracking Code Theory

Almost everywhere you go shopping; you find products with Universal Product Code (UPC) barcodes. This type of product identification UPC has become common place for the last 35 years or so.....

The barcode software is basically a database program, designed to keep track of your stock, by scanning the UPC barcodes of supplies as they arrive with a barcode reader, or scanner. Then, at the store checkout, or point-of-sale, another scanner (either a hand-held pen or wand, or a larger countertop CCD or laser scanner, or more recently, a miniature digital camera device) verifies the barcode of the purchased item, and compares the UPC number with that item in the database, then calls up the current price of that item from the database. (Timorous, 2012)

From the Orange QR webpage (2012) the traditional barcode is the system which many companies use to scan the prices of goods and products which are being sold in stores. The barcode is a series of numbers that dictates a category of product or good, and is used to track pricing, as well as to keep inventory in stores. Whenever a product is scanned, and the barcode is rung up at the point of sale (POS) system, the inventory is updated, and the accounts are updated as far as sales and revenues coming in to the retailer. But, the traditional barcode is also limited in what it can store, how much information can be obtained by a company, and what information is capable of generating, when the business, employees, or managers, are making inquiries as to that particular product. QR codes (or quick resource codes) are a similar system that is being used by more and more companies today. They are similar to the traditional barcode because they store data about the product being sold. But, the QR code is also capable of storing far more information than traditional barcodes, and they can also store several data types, which traditional bar codes are not capable of doing. (Orange QR, 2012)

Many companies consider the question of barcodes vs. QR codes when they are choosing the manner in which to keep track of goods sold and inventory on hand. Many

are going with QR codes due to the fact that they can be scanned faster than barcodes, any missing data can be restored in the code, the structure can be appended (allowing for printing the code on a narrow surface), and several other great features which companies have found, when deciding on barcodes vs QR codes.(Orange QR, 2012)

Refer with the E-book written by Winter (2011); here again is what one like the QR code:



Source: Image photo from American Sociological Association

Figure 2.1: A QR Code Example

To help you understand what a QR code is, here's what a QR code doesn't look like figure 2.2:



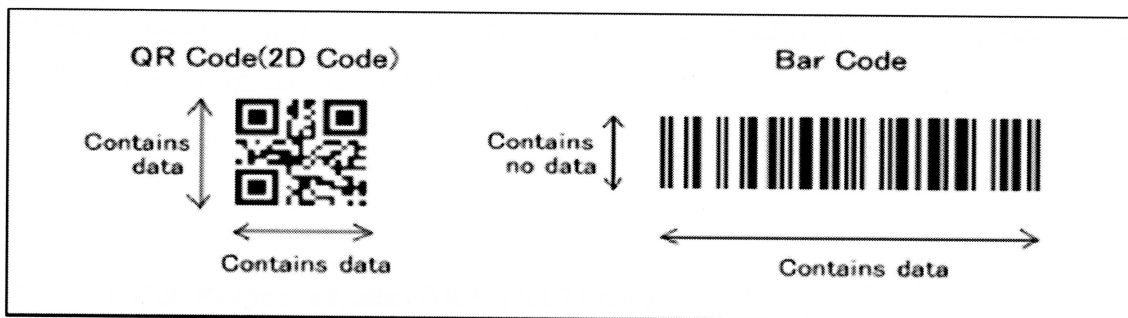
Source: Image photo from Geek News Central

Figure 2.2: A Barcode Example

This smaller code with number below it is a standard barcode. You've seen them everywhere on products and books. Manufacturer, distributors, shippers and retail sellers use them to keep track of inventory. If you scan the barcode above, you'll see information on a book. The number "9788679912077" make up the book's ISBN number, which is used on a type of barcode (EAN-13) that is a universal standard for identifying book titles.

Winter (2011) also stated that a barcode is one –dimensional. In other word, the scanner scans the code in only one direction: horizontally. The height really doesn't matter. The information remains the same no matter how tall the image is. Because a barcode is one-dimensional, it contains a relatively limited amount of information, usually no more than 20 characters, and generally less. Yes, it could contain more data if you kept stretching the barcode, making it wider and wider. But there are limits to the space available on a package or book, as well as limits on the viewing field of your scanner. So, QR codes were invented.

A QR code is two –dimensional, meaning that the information changes vertically as well as horizontally. A QR code reader scans up as well as across. This enables a QR code to contain much more information than a barcode. It also requires a more sophisticated reader, but you don't have to worry about that. You can download- at no charge- a number of very sophisticated QR code reader for your mobile phone.



Source: Image photo from Hitech Analogy

Figure 2.3: Contain Data Between QR Code and Barcode

By tracking your QR codes you can quickly find the most effective ways to reach your target client database. By learning what works and doesn't work you can shift marketing strategies accordingly. This may give you the information you've been looking for regarding new areas to spread word about our product or new age groups to target. Knowing your customer is one of the easiest ways to effectively market your product. (QRCodesinmarketing.net, 2012).

2.2 Barcode Theory

A barcode, also called bar code, is a machine-readable representation of information in a visual format on a surface. Originally barcodes stored data in the widths and spacing of printed parallel lines, but today they also come in patterns of dots, concentric circles, and hidden within images. Barcodes can be read by optical scanners called barcode readers or scanned from an image by special software. Barcodes are widely used to identify and data capture systems that improve the speed and accuracy of computer data entry. (Krar, 2012)

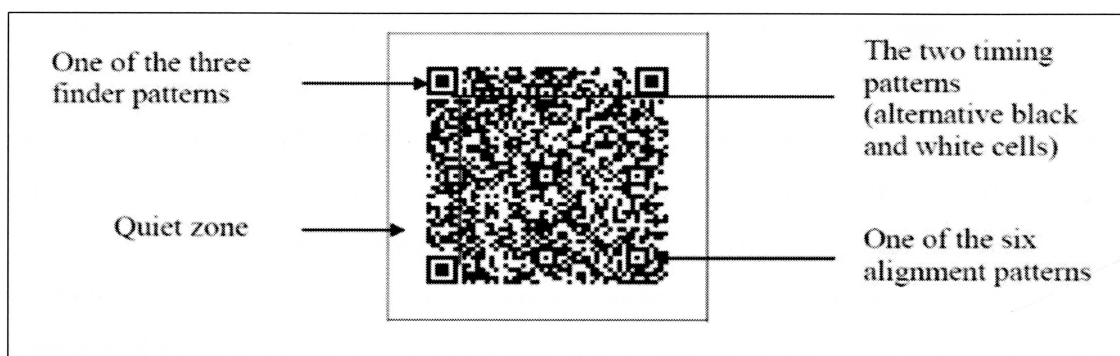
But, the barcode is increasingly reaching its limits because the storable amount of information is restricted and no longer adequate for many applications. Barcodes are located on practically all consumer goods, and our everyday world would be unimaginable without them. The barcode is an optical and electronically readable representation of information that consists of various widths of parallel lines and spaces. The data contained in a barcode can be read and electronically processed by equipment such as scanners or cameras. (DHL, 2007)

2.3 Quick Response Code (QR Code) Theory

Law, C. and So, S. (2010) describes that the Quick Response (QR) codes are versatile. A piece of long multilingual text, a linked URL, an automated SMS message, a business card or just about any information can be embedded into the two-dimensional barcode. Coupled with moderate equipped mobile devices, QR code can connect the users to the information quickly and easily.

It is readable by moderately equipped mobile phone with cameras and QR scanners. Information such as URL, SMS, contact information and plain text can be embedded into the two dimensional matrix. With smart phones, we can visit the Website linked by the URL quickly, we can send the SMS message directly or we can save the

contact information onto the address book easily. This format of 2D bar code is so popular in Japan and emerges gradually around the world because (a) the patent right owned by Denso Wave is not exercised (Denso,2010a), (b) its specification is disclosed to the public by the company so as the specification, ISO/IEC 18004:2000 & 2006(International Organization for Standardization) and JIS x 0510 (Japanese Industrial Standards), can be formed (ISO, 2010; JISC, 2010), and (c) it has a large data capacity in a small printout size and high speed scan utilities via mobile devices are readily available.



Source: Image photo from Law, C. and So, S.

Figure 2.4: Contain of QR code

A QR code is capable of holding 7,089 numeric characters, 4,296 alphanumeric characters, 2,953 binary bytes, 1,817 Kanji characters or a mixture of them. The data capacity is much higher than other 2D codes such as PDF417, Data Matrix and Maxi Code (Denso, 2010b). It stores information in both vertical and horizontal direction in. A QR code can be read from any direction 360 degree through position detection patterns located at the three corners as shown in Figure 5. A QR code can be read even it is somewhat distorted by either being titled or a curved surface by alignment patterns and timing patterns. The error correction against dirt and damage can be up to 30%. A linking functionality is possible for a QR code to be represented by up to 16 QR codes at maximum so that a small printing space is possible. The size of a QR code can vary from 21×21 cells to 177×177 cells by 4 cell-increments in both horizontal and vertical direction.