

An Acceptance of 4G (Fourth Generation) Mobile Network in Malaysia

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ABSTRACT

New technology makes possible for anyone and no doubt that the acceptance and usage of this interactive form of communication are auspicious. The launched of latest technology known as 4G in Malaysia provides the potential to change how a person works, live as well as communicates. The objectives of this paper are to assess the acceptance of 4G mobile network and to examine the factors that stimulate the usage of it. The researcher applied qualitative focus group and in-depth interview approach to collect data. A total of 15 informants is selected randomly. The findings indicated that the informants are contented and enthusiastic to use it in the future. The results from this research can be used to support as well as to develop upcoming 4G mobile network application. Further study concerning 4G mobile network is needed due to this technology is in its preliminary stage. The 4G mobile network seems to be a very promising invention of mobile communications and technology as it provides masses of interactive features and this may transform Malaysians' life as well their acuties of the wireless communication epoch.

Keywords: *Acceptance of ICT, UTAUT, 4G mobile network, communication technology*

I. INTRODUCTION

The mobile communication and wireless systems were occurring at an astounding speed, with indications of substantial development in the areas of mobile subscribers and terminals, mobile and wireless access networks and mobile services and functions [7]. The 1G (First generation) of wireless telecommunications was the brick-like analogue phones that are now collector's items and introduced the cellular architecture that is still being accessed by most wireless companies today [8]. For 2G (Second Generation) mobile, voice was the driver and has been considerable a success. Today video and television facilities are driving forward 3G (Third generation) operations and lately, with low cost, high speed data will drive forward the 4G (Fourth Generation) as short-range communication begins [13].

The current time is just suitable to commence the research of 4G mobile communication because of [7]:

- a) Opportunity, according to the past indication of a generation revolution once a decade and now we are near the end of 3G standardization stage and the beginning of 3G deployment.
- b) Inevitability: according to 3G aims, 3G is essential but not sufficient to the mobile communication approach, in which many problems are, only partly, solved in the next generation i.e. 4G.

The upcoming 4G mobile communication systems are expected to solve still-remaining difficulties of 3G systems and to offer a wide variety of new services, from high-quality voice to high-definition video to high-data-rate wireless networks. The term 4G is used broadly to include several

types of broadband wireless access communication systems, not only cellular telephone systems. One of the terms used to describe 4G is "MAGIC"—Mobile multimedia anytime anywhere, global mobility support, integrated wireless solution and customized personal service. As a promise for the future, 4G systems, that is, cellular broadband wireless access systems have been attracting much attention in the mobile communication arena. The 4G systems not only will support the next generation of mobile service, but also will support the fixed wireless networks [14].

The objectives of this research were to assess the informant's acceptance and to examine the factors that encourage them to use 4G mobile network in Malaysia. In order to understand people acceptance towards new systems, the researcher identifies two significant theories; Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology model (UTAUT). For this research, the researcher had applied UTAUT model because it is one of the most widely used in the field of information and communication technology acceptance modelling. The UTAUT attempts to clarify the user's intentions to a new information system (IS) and subsequent their usage behaviour [6]. Furthermore, the UTAUT model also considers four key constructs that are Performance Expectancy (PE), Effort expectancy (EE), Social Factors (SFs) and Facilitating Conditions (FCs). These four key constructs will help the researcher to identify the reasons of acceptance and to determine the factors that influence the informants that affect their intention to use 4G mobile network. UTAUT was developed based on conceptual and empirical similarities across eight competing and prominent models in IS adoption research. After empirical examination, UTAUT has been found to outperform the eight individual models and account for 70% of the variance in user intention [17].



II. METHODOLOGY

The numbers of informants were 15 informants who were high and moderate internet mobile and internet users at the age of 18 to 50. The questionnaires were divided into two parts: Part 1: Informants demographic information that contributed in term of gender, age, experience mobile internet usage and voluntaries of use. Part 11: Questions focused on the four key constructs of the UTAUT that is; performance expectancy, effort expectancy, social factors and facilitating conditions to understand the behaviour intention and use behaviour of new technology that is 4G mobile network. Focus group and in-depth interview approaches had been chosen to collect the primary data. For focus groups, 10 informants had been identified and these informants were divided into two small groups; (five informants in Group A and five informants in Group B) and as for in-depth interviews, five informants were identified by the researcher. The researcher briefed each of informants about the purpose of the research and 4G mobile network and devices. Since 4G mobile network considered a preliminary stage in Malaysia, the researcher decided to demonstrate 4G devices and educated the informants about the 4G mobile network before starts the focus group and in-depth interview session. The informants had been given approximately 20 minutes to examine all 4G devices. The researcher also conducted a comparison session between 3G/3.5G and 4G simply to showcase the differences between two mobile networks to the informants.

Each informant had been given an equal chance to examine 4G devices – 4G Buzz Cloud Phone – mainly for making call to seek voice quality, broadband – Go 4G Dongle – mainly internet browsing and videos streaming and WIFI – 4G Zoom Gateway for download games, videos, pdf and word files, and websites browsing and download movies.

III. SAMPLE

To select the sample, the researcher decided to organize a brief experiment on the informants. The 4G devices had been given to each informant for the purpose to identify which percentage categories that the informants can be allocated (60, 70 or 80 per cent of Internet mobile/ Internet users). However, most of the informants informed the researcher their percentage usage of Internet mobile/internet.

Table 1.1 Summary of informants

Name s	Age	Gender	Job	Education Level	Internet Mobile /Internet Usage 60%-80%
Sally	49	F	Secretary	Master	60% Internet Mobile
Intan	29	F	Manager	Degree	80% Internet Mobile
Dave	23	M	Student	Degree	70% Internet Mobile

Shah	30	M	Admin. Exec.	Degree	60% Internet
Zak	40	M	HR Manager	Master	80% Internet
Inn	20	M	Student	Diploma	60% Internet Mobile
Mus	45	M	Government Officer	Degree	60% Internet
Diana	19	F	Student	Degree	60% Internet Mobile
Sam	20	M	Student	Diploma	60% Internet
Ina	47	F	Lecturer	Degree	60% Internet Mobile
Amy	25	F	Student	Degree	60% Internet
Min	27	F	Student	Degree	70% Internet Mobile
Kam	37	F	Customer Services	Diploma	70% Internet
Jay	24	M	Student	Degree	80% Internet
Joey	21	M	Student	Degree	80% Internet Mobile

IV. RESULTS

In order to collect the data, the researcher structured the interview questions based on the UTAUT Theory [17].

1st. Key Construct - *Performance Expectancy* is defined as the degree to which an individual believes that using the system will help him or her to attain gains in job performance. The researcher decided to focus on the performance of 4G systems and ask the informants to do one demonstration from each 4G device. Reason being, the researcher tried to identify the behavioural intention and use behaviour of the informants toward 4G systems [17].

Research Theme: 4G good

Before the interview session began, the researcher had demonstrated 4G and devices for about five minutes. The informants were thrilled to see the outstanding performance of 4G systems. While the informants were focused to the demonstration, the researcher asked them a question "What do you think of 4G and its devices" The informants immediately answered:

Focus Group A

Sally: I am surprised that this mobile network you called it 4G is very good. I thought it would be the same as 3G after the introduction of 2G in Malaysia



but this is different, totally. If I buy this mobile network it will help me to do my work much faster yeah.

Intan: This is really good. The fact that the switch of one website to another in a split second is really efficient and I can open one link to another less than maybe two seconds, this is good mobile network. Good for me since I use internet mobile all the time.

Focus Group B

Inn: I think I want to switch to 4G mobile network because I can email, browse the internet, watch movies and download files less than a minute. This is great.

Mus: People nowadays cannot live without technology. I think that there is no official launch about 3G/3.5G, which is why some of us do, not aware of its presence. But now, you introduce 4G and you conduct comparison between 3G/3.5G and 4G mobile networks which is good, I think that 4G mobile network will be a great mobile internet for all of us. This 4G mobile network is useful for me because I do a lot of internet searching activities and it can help to download journals and articles for my upcoming projects.

In-depth Interview

Amy: This mobile network is good. Normally, when I browse certain websites to download something or watch movie via YouTube, I cannot stand with the buffering part. But 4G actually fulfils my wish – fast, convenient and no hassle.

Min: The content especially the video contents, I am surprise that the quality is considered good and very clear, downloading certain files also very fast and not more than two or three seconds of video buffering, yeah this is good mobile network. I think that 4G mobile network will give me more benefits.

Based on the observations, the researcher discovered that the informants that had been given the opportunity to examine 4G mobile network and the devices were stunned as well as attracted to the subject. The performance expectancy contributed to a positive effect on intention. For this reason, after a briefed presentation done by the informants themselves, they were thrilled and under those circumstances such behaviour existed since they were never been exposed earlier [17]. In this research, nearly half of the informants internet experienced were only 60%, nevertheless when they started to examine the 4G mobile network and its devices, they remained to continue from one device to another and so on. This proven that they were keen to learn more about the mobile network and its capabilities and how this will help them in term of their daily life.

2nd. key construct - **Effort Expectancy** defined as the degree of ease associated with the use of the particular information mobile network. The researcher allowed the informants to examine the 4G mobile network and its devices thoroughly. The informants were given 20 minutes to explore the 4G mobile network and the devices [17].

Research Theme: Thorough browsing, downloading and testing activities

While the informants examined the devices, the researcher asked them a question “After you examined the devices for 20 minutes, what do think of 4G mobile network and its devices”. They responded:

Focus Group A

Dave: Hi this is good. Just now we only use a part of 4G, but when you give us the opportunity to go thoroughly usage of this 4G mobile network.

Shah: Wow, really really good, I never experience such a thing. This is good from current Telco mobile network yeah.

Focus Group B

Diana: Seriously fast and efficient. I am going to use this mobile network as soon as possible.

Sam: It is a thrilling experience I tell you, normally I will have to wait for the downloading part and stuff, the YouTube browsing is so fast yeah and the phone call amazingly I can say proven in voice quality. Very very convincing.

In-depth Interview

Kam: What can I say; this 4G mobile network is awesome. No more waiting and content buffering.

Jay: Fast and convenience that words are for 4G mobile network and I like this mobile network very much.

Effort expectancy was positively linked with performance expectancy and behavioural intention in the field context [5]. Based on the results and observation, the researcher discovered that the informants were amazed with 4G mobile network with no content buffering, good WIFI connectivity, downloading content was very fast as well as the content and the mobile phone voice quality was good. This is due to the fact that they always experienced slow content buffering, mobile network hangs and shut down, slows in browsing certain websites and not connections. Once the informants experienced good performance and quality of content via 4G mobile network, they started to browse websites that contributed to large content, such as music, movies and other homepage that have many internet links. They were pleased that they can browse these websites without any annoying buffering.



3rd. key construct - **Social Condition** defined as the degree to which an individual perceives that important others believe he or she use the new mobile network [17].

Research Theme: Suggestion from friends about 4G Mobile Networks

The researcher asked the informants a question “Any friends, classmates or colleagues suggest 4G mobile network to you?”

Focus Group A

Sally: My friends never talk about 4G to me and I assumed that he/she also does not know about it and that this mobile network is already exists. But if my friends suggest to me 4G with these fabulous facilities definitely I will use it.

Zak: I've read about 4G in newspapers and sometime I saw their ads on television, but to me thinking about using the mobile network and getting a suggestion from friends or colleagues I don't think so. To be frank, I really don't understand the 4G ads until today. So sorry. But if ever my friends suggest to me this mobile network I would love to use it, seriously.

Focus Group B

Mus: Suggestion from my friends, no, they always talked about Apple iPad and some other new mobile technology stuff, mainly latest mobile phones in the market, never touch about 4G mobile network. But if my friends recommend to me this 4G mobile network of course I will use it. It is worth of buying.

Ina: My friend did mention about it, since he does not understand much about the mobile network, he decided not to talk further about it. Due to that, our conversation mainly about new and most famous mobile phones that available. I think if ever my friends suggest to me this mobile network plus demonstration of course I will buy it.

In-depth Interview

Kam: My friends or anyone has never talked to me about 4G mobile network before. I, I don't know that this mobile network is already exists. I think that it is good to get people or your friends' opinions before you buy this product because they can talk to you about the pros and cons of the mobile network. For those who experienced this even better. Of course they will demonstrate the 4G mobile network and its devices to convince you to buy the product. The way that I look at it, I might buy it.

Jay: No never, they just talked about current mobile network and latest mobile phones and wanted to buy their kids the iPad or Samsung Tab that's it. Getting

friends' opinions is important because they can advise you about certain product. Those who suggested by friends that had experienced about this mobile network is considered lucky. To me if my friend suggest to me to buy this product, I think I will.

Based on the results and observation, the researcher concluded that the informants were not aware of the existence of 4G mobile network in Malaysia even though some of them did watched 4G ads but they were unable to understand the aim and purpose of the ads. Moreover, the information that the informants received from their friends, colleagues or classmates pertaining to the most current mobile devices and technology that's available which was 3.5G. The findings of many scholars suggest that social influences are an important determinant of behavior [12] [15] [9] [11]. Reference [17] integrated subjective norms in the Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM2), and Theory of Planned Behavior (TPB), social factors in Model of Personal Computer Utilization (MPCU), and image in Innovation Diffusion Theory (IDT) into the social influence factor. Their research indicated that mobile network adopters are influenced with positive messages by their social systems; they are more likely to have a strong behavioral intention to adopt the mobile network [1]. The informants agreed that they might be influenced by their friends or peer even family suggestion. The part that motivated them to buy this product immediately if their friends or peer or even family can demonstration mobile network capabilities with faster in terms of downloading of content and linking of websites and no contents buffering.

4th. key construct - **Facilitating Condition** refers to the availability of resources needed to engage in behaviour, such as time or money [17].

Research Theme: 4G Mobile Network Resources Availability

The researcher asked the informants' another question; “Do you think that the respective company that want to launch 4G mobile network need to have enough resources such as time and money”

Focus Group A

Shah: Well, I am sure that they have yet to establish standard package like other Telco does right, so it is good to have a standard package or packages where people can subscribe and start using this mobile network as soon as possible because this is a good mobile network, the company need to do really really quick. There is a need of reliable organizational and technical infrastructure to support the 4G mobile network to avoid any faultiest. The respective organization has to organize a special department dedicated to this product.

Zak: Attractive packages and introduce more 4G devices probably touch screen devices such as iPad,



Samsung Tab or other Smartphones, I mean more variety of devices that would be nice. The organizations that want to launch this mobile network need to be efficient and the infrastructure of the mobile network need to be in good condition to avoid mobile network errors.

Focus Group B

Diana: To come out with more interesting packages and introduce more 4G devices. People have a lot of choices rather than using the current one, the current 4G phone is not appropriate. Good infrastructure to support this mobile network is needed to avoid mistakes.

Ina: Let see, I think standard and affordable package or interesting package, more choices of devices. Infrastructure of mobile network needs to be in good shape and to create a special department to handle this mobile network.

In-depth Interview

Min: Ok, to me one interesting package and to provide more 4G devices that would be great. Mobile network infrastructure and support are needed to ensure there are no flaws.

Joe: Packages and more devices choice would be the resources that are needed at the moment. Another thing is that they need to have a very good mobile network backbone or infrastructure to ensure that this mobile network in good hand.

Based on the results and observation, the researcher discovered that the informants were aware that the respective organization of 4G mobile network had yet to establish standard packages. Consequently, they had suggested to come out with affordable and attractive packages for all and also to provide more 4G devices to create more choices. Furthermore, they suggested establishing an effective infrastructure and technical support in order to avoid any difficulties occurred while the customers attend to 4G. Researchers in the field of technology studies (e.g. [17] [10] [16] [2] [15] [4] [18]) found that the facilitating conditions construct has a positive effect on innovation use as well. They also found that it is a significant predictor of the technology use. Facilitating conditions was measured by the awareness of being able to access required resources, as well as to obtain information and the necessary support needed to use mobile network services [1].

V. CONCLUSION

Based on the research finds, the informants were satisfied and willing to use the technology in the future. As had been noted that they were able to experience the power and excitement of 4G (Yes Go and Yes Buzz Cloud Phone) experienced quality voice call, powerful and much faster content download

compared to 3G and 3.5G were the main reasons why these informants willing to accept 4G mobile network. However, their main concerns were the airtime usage as current the package provided only 300MB free data or 100 minutes/100 SMS (Short Message Service) which considered not sufficient. This was because the informants spend at least two hours to browse the internet via mobile. As a result, the respective organization should increase the free data usage up to five gigabytes instead. In depth study about 4G are necessary due to the new technology was at the beginning stage. The result from this research can be used to support or develop future 4G applications. 4G seems to be promising generation of mobile communication as it provides a lot of interactive features and this may change Malaysians' life as well as their perceptions toward wireless communication.

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